The Environment: Theories, Assessment Techniques, and Policies. The Saudi Experience

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DECLARATION

This thesis has been composed by my self and is my original work.

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Abstract

Although the experience of Saudi Arabia in environmental issues is relatively recent, the government has managed to establish policy directions and administrative bodies to implement these. The current national policies suffer from several problems, including the lack of a coherent framework and difficulties in implementing adopted policies. Further more, lack of co-ordination and overlap of authority complicate the process of environmental decision making and policy implementation. This research represents an effort to analyze and evaluate environmental policies in Saudi Arabia. It provides some insight into the environmental policy decision-making process' assessment techniques, the efficiency of environmental institutions; and current practice.

The first chapter presents the problems and describes the research method and constraints. A qualitative method is used in considering and evaluating the factors which have led to formalising, and implementing environmental policies. The second chapter reviews the evolution of environmental theories and ethics through different phases of history, including the Islamic perspective of man-nature relation. Chapter three gives a theoretical background of environmental economics, environmental decision making, assessment techniques, policy formulation, policy instruments, and environmental law. A brief review of national environmental policies in several countries is included.

A background of the Saudi environment and environmental conditions forms the first part of chapter four, while the second part introduces the political system and culture of the Kingdom of Saudi Arabia. An example of a traditional environmental practice is given in the same chapter. The fifth chapter discuss and assesses the Saudi environmental policy documents, the administrative structure, environmental decision making process, and environmental laws. Further discussion and assessment of environmental institutions, environmental awareness, and public participation is given in chapter six. The seventh chapter summaries and categorises the major factors shaping the Saudi environmental policies and presents a proposal for change including a revised framework of national environmental policies and new institutional structure. Chapter eight gives a concluding summary in addition to suggestions for future research.

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List of Abbreviations

Arriyadh Development Authority ..... **ADA**
Council of Ministers ..... **CM**
Development Plan Assessment Report..... **DPAR**
Directorate General of Forest and Range lands ..... **DFR**
Environmental Impact Assessment ..... **EIA**
Environmental Protection Coordination Committee..... **EPCC**
General Directorate of Environmental Protection..... **GDEP**
General Establishment for Port Facilities ..... **GEPF**
Higher Committee for Administrative Reform ..... **HCAR**
King Abdulaziz City for Science and Technology ..... **KACST**
Meteorology and Environmental Protection Administration..... **MEPA**
Ministerial Committee on the Environment ..... **MCE**
Ministry of Agriculture and Water ..... **MAW**
Ministry of Finance and National Economy ..... **MFNE**
Ministry of Foreign Affairs ..... **MFA**
Ministry of Health ..... **MOH**
Ministry of Municipal and Rural Affairs..... **MOMRA**
Ministry of Petroleum and Mineral resources ..... **MPMR**
Ministry of Planning ..... **MOP**
Ministry of the Interior ..... **MOI**
National Coastal Zone Management Plan ..... **NCZMP**
National Commission for Nature Conservation ..... **NCNC**
National Commission for Wildlife Conservation and Development **NCWCD**
National Contingency Plan for Marine Pollution Control ..... **NCPMPC**
Preparatory Committee for MCE ..... **PCMCE**
Risk Assessment ..... **RA**
Royal Commission for Environmental Protection ..... **RCEP**
Royal Commission for Jubail and Yanbu ..... **RCJY**
Saudi Arabian Standards Organization ..... **SASO**
Saudi Environmental Awareness Project..... **SEAP**
Saudi Environmental Society..... **SES**

Secretariat General for the Council of Ministers .....**SGCM**
Secretariat General of Ministerial Committee of the Environment **SGMCE**
Social and Health Committee of *Majlis Al-Shura* .....**SHC**
Strategic Environmental Assessment .....**SEA**

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Chapter One

Introduction

While concern for natural resources is rooted deep in the human psyche and history, the rapid exploitation of natural resources and the increasingly damaging impact of this on the environment and human health has reinforced environmental concern in many parts of the world. This has resulted in the adoption of environmental policies and regulations, mainly by the National governments. These political solutions, as Paehlke & Torgerson (1990) put it are merely palliative:

> "The calm voice of the official assures the public that the proper administrative procedures are in place: all is under control, and environmental protection can be taken for granted. Yet when the populace seems lulled again into sense of security, another environmental crisis captures the focus of popular attention."[1]

The continuous struggle to adopt policies and legislate for environmental protection has faced many problems in all parts of the world. Political cultures have influenced decision making and controlled implementation, making the politics of the environment one of the most complicated at both national and international levels. This struggle is apparent in the case studied in this research 'The Kingdom of Saudi Arabia.'

This chapter outlines the research questions and aims, in addition to a discussion of the methodology used and brief outline of the thesis's structure.

1.1 Problem Statement

In 1932 the Kingdom of Saudi Arabia was founded covering a major part of the Arabian Peninsula. The growth of the Saudi Arabian economy was based on oil exportation revenues that began in 1938. However, increased revenues in the 1970's rapidly accelerated urban, industrial, and agricultural growth. This rapid growth placed pressure on the sensitive desert environment. Exploitation of natural resources including valuable aquifers and oil production activities severely deteriorated environmental conditions. Urban growth resulted in disturbing fragile habitats and new forms of stress including pollution and health problems.

Adopting and implementing environmental policies in Saudi Arabia is strongly influenced by the prevailing political and administrative culture. The country as an absolute monarchy has a centralised decision making process. This is dominated by the Council of Ministers in which the King is the prime minister and the Crown Prince is the deputy prime minister. This centralised distribution of power limits public participation in decision making and places the whole responsibility of protecting the environment on the government and its agencies. No grassroots environmental organisations function in the country and there is no structured lobby or public pressure groups influencing environmental decision making and policies.

As in other countries the government attempted to deal with environmental problems by adopting policies and legislation to protect the environment and control human activities, in addition to structuring administrative bodies to carry out their implementation. Several problems hindered the national framework for environmental policies including: policy inconsistency, administrative conflicts, overlap of authority, and failure to implement adopted policies and laws. Few studies dealt with the issue of

environmental polices in Saudi Arabia, most of them concentrated on specific topics such as water and agricultural policies, pollution, and natural resource management. This left the area of national policies and governmental approach towards environmental problems in need of study and assessment. This thesis attempts to tackle the broad scope of assessing national policies and influential factors shaping these.

1.2 Research Questions and Objectives.

The research aims to: evaluate and assess environmental policies in the Kingdom of Saudi Arabia and the government's attitude towards environmental issues; and diagnose the deficiencies of national environmental policies. The main questions to be addressed are whether there is a clear framework for national environmental policies including decision making processes and institutional structures, in addition to defining what are the influential factors behind initiating, formulating, and implementing environmental policies.

The research covers a wide range of "Environmental" policy topics which are distributed within the authority of several agencies and ministries. The broad definition of Environment discussed in this thesis includes issues affecting human health and quality of life such as pollution, and services such as waste disposal, sanitary systems and water supply. It also covers natural resource conservation and management; this part deals with issues such as wildlife, water resources, forests and range lands, marine environment, national parks, and agricultural issues. The research discusses these topics throughout the thesis and more specifically under their relevant body. This is covered in chapter five and six. However, a review of policy documents, the administrative structure, environmental decision making, and environmental laws precedes this in

chapter five. These topics form the core of environmental policy investigation covered in this thesis.

In order to answer the research questions several objectives were used. These included:

1- Historical background of the different theories of environmental conservation and ethics.

a- Study the Islamic perspective of environmental conservation.

b- Examine the roots of environmental ethics in different phases of history.

c- Review modern environmental movements and the political implication of environmentalism, with an international perspective.

2- Review theories of environmental policies.

a-Study the process of environmental decision-making

b-Examine tools of assessment used in environmental decision making

c- Examine policy formulation and implementation mechanisms.

3- Study the experience of several countries in environmental policies.

4- Review environmental conditions and stresses on the Saudi environment.

5- Study and analyze the political system and culture of Saudi Arabia.

a- Review constitutional principles and the role of the Consultative Council (*Majlis Al-Shura*)

b- Review traditional conservation practices such as 'the *Hema* system' of range management.

6- Historical review of Saudi environmental policies and laws.

7- Evaluate the effectiveness of environmental policies in Saudi Arabia.

a- Study and assess policy documents related to environmental issues.

b- Assess the governmental structure and agencies dealing with environmental policies, including overlapping authority and administrative conflicts.

c- Study and evaluate environmental legislation.

d- contrast the policies as practiced with any written policy or regulation.

8- Study and assess environmental decision making processes.

9- Study and evaluate the activities of environmental agencies and NGO.

10- Demonstrate whether there is a clear framework of national environmental policies

11- Develop a framework for national environmental policies for the Kingdom of Saudi Arabia.

a- Propose reforms to the current decision making process.

b- Propose a conceptual draft for a broad Environmental Policy Act.

c- Develop an administrative structure to carry out the proposed reforms.

d- Propose areas of concern to be covered by future legislation.

1.3 Research Methodology

This considers the need to evaluate relationships and factors that have led to environmental policy making using a qualitative method. This includes document analysis, literature review, interviews, field notes and personal observation. In the case of Saudi Arabia, as indeed in other developing nations, availability of documented information can be limited, in addition to the extreme difficulty in gaining access to such documents if available. The thesis attempts to assess national environmental polices including evaluation of policy documents. Analysing these documents in terms of their consistency and compatibility with wider development policies as expressed in national development plans, and with each other, provided the base for compiling national environmental policy assessment. Cross referencing policy proposals in specific areas such as pollution monitoring and environmental impact assessment helped in compiling

policy evaluation. The analyses of institutional structure, distribution of authority and mandate were used to diagnose administrative conflicts and overlap of authority. Furthermore, comparing adopted policies and laws with current practice provided evidence of the degree of compliance and implementation. Information collected from interviews with officials in the environmental field were important in this analysis.

The author adopted the officially acceptable path for requesting governmental documents by sending official letters from King Abdulaziz University (the sponsoring body) to relevant agencies and ministries asking for their co-operation in obtaining copies of relevant documents and interviews with officials at various levels. This activity was carried out during a field trip to Saudi Arabia in 1995.

The field trip aimed to collect relevant documents related to environmental policies, laws, institutional structure and mandate. Most importantly it aimed to interview officials involved with environmental issues and participants in the decision making process. During a period of three months several bodies were visited in Jeddah, Riyadh, and Dhahran, some of them several times, where the official request for documents was submitted. The bodies visited included: Meteorology and Environmental Protection Administration (MEPA), Ministry of Municipal and Rural Affairs (MOMRA), Ministry of Agriculture and Water (MAW), The National Commission for Wildlife Conservation and Development (NCWCD), The Saudi Environmental Awareness Project (SEAP), Saudi Aramco, and King Abdulaziz City for Science and Technology (KACST). Contact was also made with the Royal Commission for Jubail and Yanbu (RCJY). This resulted in varied degrees of success. However, one major obstacle was the unco-operative attitude of MEPA officials in charge of dispensing publications and documents. This resulted in delaying the

availability of some documents for up to one year. Access was denied to a classified report prepared by the World Bank which reviews environmental activities in the Kingdom and proposes a new structure for MEPA. Another kind of problem existed in the case of Saudi Aramco, where access to some of the company's standards and regulations was denied. NCWCD was the most co-operative body in terms of availability of reports and documents. In the case of MOMRA no documents were available despite promises that they would be forwarded. In some cases, such as the administrative structure of MAW, data had to be assembled from several sources, due to the lack of one official source. Most of governmental documents were in Arabic which required extensive translation, especially when used in the text.

The other part of the field trip was relatively successful. Several interviews were conducted, resulting in valuable information not available in written documents, mainly concerning overlap of authority and conflicts in the decision making process. Officials interviewed are referred to anonymously in the thesis according to their affiliation, e.g., (MAW Official 1). Follow up of new developments in the Kingdom included a continuous review of Saudi news papers, in addition to further contacts with environmental institutions. Further discussion of approach to interviews is given in Appendix A.

1.4 Thesis Structure

To achieve the specified aims of this research the thesis is structured in eight chapters each dealing with certain topics building towards the final analysis and recommendations. The first one introduces the research aims and questions in addition to describing the methodology used and the general structure of the thesis.

The second chapter reviews the evolution of environmental theories and ethics through different phases of history, including the Islamic perspective of human-nature relation. Chapter three gives a theoretical background of environmental economics, environmental decision making, tools of assessment, policy formulation, policy instruments, and environmental law. A brief review of national environmental policies in the USA, the UK, the Netherlands, Denmark, and the Sultanate of Oman is included.

A background of the Saudi environment and environmental conditions forms the first part of chapter four. This part reviews how development activities impact on the environment and current environmental stresses arising from these. The second part introduces the political system and culture of the Kingdom of Saudi Arabia. This includes the "General Law of Government" and the role of the Consultative Council "*Majlis Al-Shura*". In both cases items related to environmental policies and the environmental decision making process are discussed. An example of a traditional environmental practice the *Hema* system is given in the same chapter.

The fifth chapter discusses and assesses Saudi environmental policy documents, the administrative structure, environmental decision making process, and environmental laws. This includes categories of governmental bodies involved, and a review of adopted laws. Further discussion and assessment of environmental institutions is given in chapter six. This includes the three main agencies in addition to major players and NGO's. The state of environmental awareness and the public role in the environmental debate in Saudi Arabia form part of this chapter.

The seventh chapter summarises and categorises the major factors shaping the Saudi environmental policies and presents a proposal for revising the framework of

national environmental policies. This includes proposals to rectify the public role, a revised decision making process, conceptual draft for Environmental Policy Act and new institutional structure. Chapter eight includes a concluding summary and recommendations for future research.

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[1] R. Paehlke & D. Torgerson, "Preface" in R. Paehlke & D. Torgerson (ed.) **Managing Leviathan - Environmental Politics and The Administrative State.** London: UK, Belhaven Press, 1990. p. 1.

Chapter Two

Reviewing the Ideological Struggle in the Environmental Theory

Introduction

Death is the finality of life, a fact well known to man. In his pursuit of maximum assertion of this short life, man has strived hard to establish his civilization on earth. His activities have brought him in constant interaction with nature. This relation of Man and Nature has been reviewed throughout history by philosophers, scientists, poets, and politicians, resulting in diverse thoughts and theories.

This chapter, consisting of six sections, will discuss the ideological struggle in environmental theory and its influence on human behaviour and environmental policies. The first section will review the Islamic perspective of man-nature relationship, covering the creation story and concept of "*Kelafah*" in Islam, in addition to Shari'ah laws regarding nature. The second section discusses two dominant modes in the environmental theory, Ecocentrism and Technocentrism, and the influential philosophies and theories which helped in shaping both modes. The emergence and influence of the Romantic movement on the environmental theory form the third section, including European romanticism and America Transcendentalist. The struggles of the modern environmental movement are discussed in the fourth section covering influential writings and trends. The fifth section discusses the topic from an international perspective, showing the effect of

the power struggle in shaping environmental policies. A summary concludes the chapter.

2.1 The Islamic Perspective Of Nature

Islamic teaching has influenced the way of life in many parts of the world. The case of study in this thesis, Saudi Arabia, maintained strong links with Islamic teachings and laws. This section divided into three subsections; the Creation Story, the Concept of *Kelafah*, and Shari'ah and Nature, presents a brief discussion of the Islamic perspective towards nature.

2.1.1 Creation Story

Islam is a monotheistic religion. Its basic belief suggests that there is only one God (Allah), the creator, who created everything from nothing. Life and death were created by Allah so that humans and Jinn[1] might serve him by good work and worship.

> He who has created death and life, that He May try
> which of you Is best in deed: And He is the Exalted
> In Might, Oft-Forgiving;- Qur-an 67: 2

In another Qur-anic verse[2] Allah informs his servants:

> We created not The heavens, the earth, And all between them, Merely
> in (idle) sport:
> We created them not Except for just ends:
> But most of them Do not know. Qur-an 44:38-39

According to the Islamic doctrine the creation of earth and human beings has a purpose, that is to serve Allah by worshipping him, while utilizing the earth as a temporary habitat.

> I have only created Jinns and men, that They may serve me. Qur-an 51:56

The Islamic perspective of the world implies that there are two types, the world of the unseen and the world of the witness. The first consists of all metaphysical worlds, the one we believe to exist but normally cannot perceive. This includes the Angels, Jinn, Heaven and Hell. The second consists of all physically perceived objects, including the unknown part of the universe.[3] Only Allah Almighty has the power to know both worlds since he created them.

> He knoweth the unseen and that which
> is open; He is the Great, The most high. Qur-an 13:9

Al-Doswqi (1986) argued that the Universe, whose limits we do not know yet, is from an Islamic perspective, part of the first sky or "*samaa*". According to Qur-an this unlimited universe is one of seven heavens, the rest is beyond our perception.

> Allah is He who created seven Firmaments and
> of the earth A similar number, Through the midst
> of them (all) descends His Command: that ye may
> know that Allah has power Over all things, and that
> Allah comprehends all things in (His) knowledge. Qur-an 2:22

For Muslims the beauty of nature is evidence of Allah's ability. The most common word when witnessing such beauty is "*saubhan Allah*" or "O' how glorious is Allah." In many cases the Qur-an explained that every object, living or non-living, glorifies and thanks Allah almighty.

> The seven heavens and the earth, And all beings therein,
> Declare His glory: There is not a thing But celebrate His praise;
> And yet ye understand not How they declare His glory!
> Verily He is Oft-Forbearing, Most Forgiving! Qur-an 17: 44

When discussing the Islamic view of nature Khalil (1981) suggested that nature was not created to negatively challenge humans by its beauty and prevent them from reaching perfection, nor did it provoke him to overcome nature. Nature,

according to Khalil is a positive enlightenment, which motivates man to explore creativity. It is like a fair competition where there is no winner or loser. That is because both nature and man are Allah's creation.[4] Khalil's argument suggests that nature never takes a final form, because the law of Allah allows it to change and evolve continuously. He suggested that Muslim attitude towards nature is distinguished by its moral sympathy and a holistic attitude towards Allah's creations.[5]

> Behold In the creation Of the heavens and the earth;
> In the alteration Of the Night and Day; In the sailing
> of the ships Through the Ocean For the profit of mankind;
> In the rain which Allah Sends down from the skies;
> And the life which He gives therewith
> To an earth that is dead; In the beasts of all kinds
> That He scatters Through the earth; In the
> change of the winds, And the clouds which they
> Trail Like their slaves Between the sky and the
> earth; - (Here) indeed are signs for a people that are wise. Qur-an 2:164

When interpreting the following verse:

> He Who created the seven heavens One
> above another; No want of proportion wilt
> thou see In the creation Of the Most Gracious
> So turn they vision again; seest thou any flaw? Qur-an 67: 3

Syeed Qutb, the prominent twentieth century scholar, was to write:

> "One of the gifts of Allah to mankind is his ability to respond (react) to this Universe with sight and contemplation. The heart receives the rhythm of this universe directly when he is open and appreciative of this unlimited space. It is the beauty, the beauty which man can perceive, live with but cannot describe with words and sentences. The Quran directs the soul towards the beauty of creation, because understanding and perceiving the beauty of creation is the nearest and most believable method to understand the beauty of the creator. This understanding raises mankind to the highest horizon he can reach. At this level he cleanses himself from the earthy life.[6]

Khalil (1981) argued that when the Qur-an called mankind to study and ponder upon nature, it was not limited to the experimental and practical side, i.e. to

make use of natural resources, but it included the call to use the inspired spirit (by the beauty of nature) to refine and raise the human feeling to taste and appreciate beauty.[7] According to Khalil the obvious result of such appreciation and study of nature would guide mankind to the correct path of Allah.[8] This concept certainly has gained support from the large number of scientists and artists who experienced the tremendous shock to their souls, while studying or drawing natural phenomena.

2.1.2 *Kelafah*

The Islamic view of man - nature relationship is built around the concept of "*Kelafah*", which can be translated as representation or trusteeship. Islam specifies the role of man on earth as the *Kalefah* of Allah Almighty, i.e. his vicegerent, or the tenant of earth, this concept indicates that although Allah granted man the privilege to live on the earth, he, the Almighty, as the ultimate creator and owner placed conditions on this grant, which included the trust to look after Allah's creation. What makes this condition critical for Muslims is the belief that humans eventually will be judged on how they maintain this stewardship.

Kelafah has two sides, one between man and Allah and the other between man and the earth, the subject of *Kelafah.* Al-Doswqi (1986) suggested that both sides are integrated, where man's authority on earth is subject to his worship of Allah "the owner". This duty as *Kalefah* or vicegerent was imposed on man by Allah as part of the human creation.[9]

> It is He (Allah) who has made you his vicegerent on earth. Qur-an 6:165
>
> Do no mischief on the Earth after it has been set in order. that will be best for you, if ye have faith Qur-an 7:85
>
> It is We Who have Placed you with authority On earth,
> and provided you therein with names For the fulfillment

of your life : Small are the Thanks that ye give! Qur-an 7:10

Islamic teaching emphasizes that man's role on earth is limited and soon will end. His actions and behaviour during his short life will be accounted for on the day of judgment. Prophet Mohammad upon whom be blessing and peace advised Muslims: " Work in this life as if you will live forever, and work for the hereafter as if you will die tomorrow". The Quran gives similar advice:

> Verily, the promise of Allah Is true : let not them
> This present life deceive you nor let the chief Deceiver
> Deceive you about Allah. Qur-an 31:33

This belief that man is trusted by Allah to make use of his property (the earth) strongly influenced Muslims' attitude towards nature. Masri (1992) explained that "our right to use the natural resources is only in the sense of usufruct - which means being given the right to use another person's property on the understanding that we will not damage, destroy or waste what is our trust."[10] Qur-an reminded Mankind by asking:

> Say: "To whom belong The earth and all beings therein? (Say) if ye know".
> They will say, "To Allah!" Say: "Yet will ye not Receive admonition?
> Qur-an 23:84-85.

The Qur-an repeated in many verses the advice to mankind to judge and control their action on earth:

> O children of Adam! Wear your beautiful apparel;
> At every time and place of prayer : eat and drink :
> but waste not by excess, For Allah loveth not the wasters. Qur-an 7:31

When explaining the concept of *Kelafah* Al Mawdudi (1993) used the example of an estate owner who appoints someone to administer it. He suggests that there are four conditions to the agreement of (*Kelafah*). First, the real ownership of the estate remains vested in you and not in the administrator. Secondly, he administers your property directly in accordance with your instructions; thirdly, he

exercises his authority within the limits prescribed by you; and fourthly, in the administration of the trust he executes your will and fulfils your intentions and not his own. Any representative who does not fulfil these four conditions will be abusing his authority and breaking the convenant which was implied by the concept of representation.[11] Al Mawdudi explained that:

> "This is exactly what Islam means when it affirms that man is the representative (*Kalefah*) of God on earth ... the term *Kelafah* also makes it clear that no individual or dynasty or class can be *Kalefah*: the authority of *Kelafah* is bestowed on the whole of any community which is ready to fulfil the conditions of representation after subscribing to the principles of Tawhid and Risalah."[12]

2.1.3 Shari'ah and Nature

Sovereignty in Islam is vested in Allah and the people are his caliphs (*kulafa* plural of *Kalefah*) or representatives. They have to follow and obey the laws "Shari'ah" given by God through His prophet.[13] Shari'ah laws were established during the prophet's time, drawing from two sources: *Quran* and *Sunna*, that is sayings and acts of the prophet, in addition to actions that he approved. Later, two additional sources were established and agreed upon by Muslim scholars. These are "*Ejma* " i.e. consensus of Muslim scholars and "*Qeyas* " i.e. analogy of similar circumstances and rulings. According to S. Vesey-Fitzgerald, the Shari'ah is defined as:

> "The whole duty of man. Moral and pastoral theology and ethics; high spiritual aspiration and the detailed ritualistic and formal observance which to some minds is a vehicle for such aspiration and for others a substitute for it; all aspects of law, public and private hygiene, and even courtesy and good manners are all part and parcel of the Shari'ah."[14]

Muslim scholars have defined the ultimate objectives of Shari'ah as the universal common good of all created things, both in this life and in the life after death.[15] When discussing Shari'ah laws Llewellyn (1984) argued that "It must be

emphasized that Islamic law is value-centered ... Ethics and law are not strictly differentiated in Islam, and all rulings of the Shari'ah concerning social transaction aim at realizing certain divinely ordained value goals."[16]

There are several institutions related to environmental policies and management derived from Shari'ah laws. These are:[17]

1- *Ihya,* acquiring unowned land through reclamation (bringing life to the land)
2- *Iqta*, land granted by the state to cultivators;
3- *Ijarah,* leasing land to cultivators;
4- *Haram*, protected zones;
5- *Hema*, reserves of land established for public purposes and for preservation of natural habitat;
6- *Waqf*, land given charitable for the public good;
7- *Hisbah*, the office of public inspector to ensure public and private land, resources and property are used correctly.

All these institutions were applied in Muslim countries since the sixth century, however, in recent time with more secular governments and institutional structures these institutions diminished in many countries. The *Haram* for example, is an ancient Shari'ah ruling from the time of Prophet Mohammad upon whom be blessing and peace. According to Zuhayli (1985) *Haram* can be defined as: "an inviolable zone which may not be used or developed, save with the specific permission of the state. The Haram is usually found in association with wells, natural springs, underground water channels, rivers and trees planted on barren land or *mawot* (wild or uncultivated land)."[18] The Prophet established several rulings in regard to nature conservation. He declared the Makkah area as "*Haram*". This classification indicates that this area is completely protected from any acts such as

cutting trees and shrubs or hunting animals. Ibn Abas reported that Prophet Mohammad, upon whom be blessing and peace, said:

> "This land (Makkah) is Haram, you are not allowed to cut its trees or shrubs, nor to hunt its animals". Narrated by Bukhary

Muslim jurists explained that the reference to trees and shrubs is limited to native vegetation and does not include any cultivated crops. The boundary of Makkah *Haram* was established by Prophet Ibraheem (Abraham) upon whom be blessing and peace and renewed by Prophet Mohammad upon whom be blessing and peace in the 6th century. This ruling is still active and applies nowadays. A similar *Haram* was also declared around Madenah with slightly different rules to allow people to feed their livestock by cutting grass. Jaber Ibn Abdullah reported that the Prophet upon whom be blessing and peace said

> "It is Haram (Al Madenah) that is the area between the two lavas, it is not allowed to cut its trees, except to feed animals". Narrated by Ahmad

Shari'ah laws incorporated an ancient tribal law for range management that is "The *Hema* System". This system controlled and regulated the intensity of utilizing natural resources. Prophet Mohammad upon whom be blessing and peace established a *Hema* near Madenah in a mountainous region called "Al-Figrah" where shrubs and trees were protected mainly for honey production. Al-Fiqrah *Hema* is still intact with juniper tress as old as five hundred years, its honey is renowned for its special qualities. In another ruling the Prophet prohibited cutting desert trees if they provided shade and supported human and animal life. Llewellyn (1980) explained that the prophet sayings (*ahadith*) "all indicate that the aim of both production and conservation in Islamic law is the universal common good of humans and other created beings together."[19] For further discussion of Islamic perspective of

the environment and institutions pertaining to environmental management see Llewellyn (1982, 1992), Husaini (1980), Sardar (1984), Joma (1991), Khalid & O'Brien (eds) (1992), and Ba-Kader (*et al.*) (1989).

Islamic *Shari'ah*, emphasized that government is accountable to the public in there actions, and reform of the political system is trusted to the Muslim public if the governor is not following the Islamic *Shari'ah*. On the other hand the government is accountable to Allah in the day of judgment, rulers and decision makers each according to his responsibility are judged for their actions and fulfillment of their responsibilities towards human and non humans alike.

It should be noticed that the Islamic perspective of nature is based on the divine teaching which make this *Divine Ecology* part of the Muslim faith. The full and comprehensive application of this Divine Ecology in all aspect of life can make a difference in human attitude towards nature. Divine Ecology can also be incorporated in non-Muslim societies as long as they agree to the principal rights of human well being and respect of God's creation, in addition to the accountability of their actions by the creator of this planet, the true owner.

2.2 Ecocentrism Vs. Technocentrism

When studying the evolution of environmental theories in the western world, two main ideological themes distinguish themselves: Ecocentrism and Technocentrism. The definition of each mode of thought will depend on the time of definition and the relative understanding of the definer. The evolution of each mode can be traced to different philosophical and scientific roots, resulting in a continuous clash between them. Romanticism and ecological theories, such as the web of life,

shaped the Ecocentric mode. Ecocentrism is characterized by its pessimistic views towards environmental problems and calls for respect of nature for its own right, in addition to limited economic and population growth. On the other hand rationalism and religious (Judeo-Christian) beliefs shaped the Technocentric mode. Technocentrism is characterized by its optimism towards environmental issues and believes that through technological power humans can solve their problems. The modern environmental movement draws from both modes, which further complicates the ideological struggle.

Pepper (1984) defined Ecocentrism as "A mode of thought viewing man as a part of global ecosystem, and subject to ecological system laws ... there is also a strong sense of respect for nature in its own right as well as for pragmatic reasons."[20] McConnell (1971) described the Ecocentric mode as "resting upon the supposition of natural order in which all things moved according to natural law, in which the most delicate and perfect balance was maintained up to the point at which man entered with all his ignorance and presumption." [21]

Technocentrism takes a more rational view of man- nature relationship. It admires the power of technology and believes that man's ability to develop techniques of controlling and using nature overshadow any negative effects. Pepper (1984) described Technocentrism as "A mode of thought which recognizes environmental problems but believes either unrestrainedly that man will always solve them and achieve unlimited growth or more cautiously, that by careful economic and environmental management they can be negotiated."[22] It is observable that rationality formed the philosophical base for the Technocentrics; their objective is to achieve a given goal by technological advancement and

managerial efficiency. When contrasting the two modes, O'Riordan (1976) suggested that progress, efficiency, rationality, and control form the ideology of Technocentrism, which down play the sense of wonder, reverence, and moral obligation that hallmark the ecocentric mode. [23]

The roots of Technocentrism in Western culture can be traced back to Biblical times. The most influential script was the famous Genesis advice to mankind, "replenish the earth, subdue it : and have dominion over the fish of the sea and over the fowl of the air and, over every living thing that moveth upon the earth." (Genesis, chapter 1, v.28) This Biblical message strongly dominated Western mentality for a long time, and shaped the moral obligation towards nature. Pepper (1984) suggested that Christianity has two attitudes towards nature: man as dominant and as steward, and he questioned why the first one seemed to be selected by Western society.[24] McHarg (1992) described the influence of the creation story in Genesis, which is common for Judaism and Christianity as: "a passport to suicide, genocide and biocide ... The creation story in Judaism was absorbed unchanged into Christianity. It emphasized the exclusive divinity of man, his God-given dominion over all things and licensed him to subdue the earth."[25] This insistence of man's divinity can be recognized today in the anti- conservation movements in the United States of America, which find support from the mainly White Anglo-Saxon Protestant religious groups.

J. Kepler (1571-1630) used the word "Machine" as a metaphor to describe nature, which initiated the "Mechanistic conception of nature." The idea of mathematical order was also expressed by Galileo Galilei (1564-1642) who believed that the book of nature was written in the language of mathematics and therefore had

to be read and understood via mathematics. Viewing nature as a machine and the tendency to accept that "scientific knowledge" **equals** "Power over nature" was propagated by Francis Bacon. He suggested that this power must come through understanding nature mechanism and how it functions. Bacon expressed this idea in his technological utopia *New Atlantis* : "The end of our foundation is the knowledge of cause and secret motions of things and the enlarging of the bounds of the human empire to the effecting of all things possible." Bacon's essay is a good example of a classical scientific dream, where man's supremacy is the goal, where anything leading to this goal is acceptable. In the *New Atlantis* society, science and technology acknowledge no limits; Bacon's utopia prophesied the dream of the modern Western culture "the prolongation of life, the restitution of youth, in some degree the retardation of age and the curing of diseases counted incurable." In *New Atlantis* nature is totally subjected to the power of mankind, or more precisely, of the technocrats of Solomon's House, and limits exist only in order to be transgressed.[26] Later Auguste Comte (1798-1857) advocated Positivism, which strongly influenced the Technocentric mode by accepting only positive facts. Comte promulgated the supremacy of science in seeking natural laws, he defined science as the study of "real", that is empirically-observed phenomena. [27]

Thomas Hobbes in his "Leviathan" (1651), discussed the power conflicts within society. He suggested that every social phenomenon is based on power relation between individuals and groups. However, he claimed that it was not important whether the authority rested in a monarch or a parliament. What was important was that the Leviathan (the visible power) be hegemonious and altogether clear to everyone. Scarcity, according to Hobbes, was caused by the continuous comparisons and strife between individuals and groups. [28] He suggested that Man's

unlimited desire was natural, which would result in scarcity, turning society into a life boat where all passengers fight each other for survival. Hobbes's views can be considered conservative, and from the future international perspective imperialist.[29] Concentration of power and wealth was justifiable in keeping society under the control of authoritative power (Leviathan). Hobbes's concept of "covetousness" the desire of riches, mark that "this name is always used in signification of **blame**." Although in different forms, it is interesting to realize more than three hundred years later, that the same ideology still applies. Rich and powerful countries dominate the less powerful and poor countries, exhausting their resources for the benefit of the powerful society. In "***the New Leviathan ... the new world order*** " the world of the GATT agreement, to blame the rich is to be blamed. In 1992 during the "Earth summit", President G. Bush of the United States of America, draws the bottom line. "the life style of the US would not be for discussion in Rio."[30]

On the other side of the spectrum, John Locke, a liberal philosopher, blamed nature which failed to provide enough resources for all. He justified his blame because nature did not support economic growth by the needed raw materials. It is the myth of Enlightenment which dominated Europe, where growth and expansion is the solution for all problems. At that time the solution was comprehended to be the empty continent of America, the new future for European colonial expansion. When discussing the expansion mentality, Achterhuis (1993) described Cecil Rhodes, as the greatest imperialist of the 19th century, who openly stated that imperialism was necessary in order to avoid a class war in England. And he already dreamt about the necessity of an ongoing expansion into the Universe: "I would annex the planets if I could", he wrote. [31]

One of the basic theories which influenced Ecocentrism was the "great chain of being". The concept of a continuous link between all creatures including man, and the strong dependence on nature, justified man's respect for nature. However, using only pragmatic reasons to justify man's relation with nature, tends to be linked with the Technocentric mode rather than Ecocentrism. Thomas Malthus' essay on "*The Principle of Population*" (1798. 1st edt.- 1803. 2nd edt.) marked the first scientific effort to discuss the limitation of the earth's resources. Hollingsworth (1973) suggested that "it was the attempt to be specific and mathematical about the dilemma of an expanding population, what is Malthus' special contribution to thought."[32] The main concept of this essay discusses the limitation of the earth's resources to support the expected growth in population. Malthus was worried that population:

> "When unchecked, goes on doubling itself every twenty-five years, or increases in geometrical ratio ... the food to support the increase ... will by no means be obtained with the same facility. Man is necessarily confined in room when acre has been added to acre till all the fertile land is occupied, the yearly increase of food must depend on the melioration of the land already in possession. This is a fund, which from the nature of all soils, instead of increasing must be gradually diminishing. But population, could it be supplied with food, would go on with unexhausted vigour; and the increase of one period would furnish the power of a greater increase of the next, and this without any limit ." [33]

Malthus was seen by many as an atheist, because he talked of natural rather than Christian laws, and against the Biblical advice in Genesis to be "fruitful and multiply". Although Malthus was considered pessimistic and shortsighted, since he underestimated the technological advancement to come, his ideas have considerable support nowadays. The limitation of earth's resources is the main argument for the modern environmental movement, many of them are regarded as "neo-Malthusians."

In the middle of the nineteenth century, Darwin developed the concept "web of life" by including man in the system, which was later developed in 1869 by Haeckel as the new science of "Ecology". The formulation of the science of Ecology dramatically increased man's understanding of nature. In the nineteenth century scientists began to study topics such as deforestation and pollution. Wall (1994) suggested that ecology strengthens the holistic philosophy of the green movement, placing it on a rational rather than religious basis.[34] Darwin's contribution extended to the concept of "equilibrium in nature". He described the relation between the living organisms: "so nicely balanced that the face of nature remains for a long time uniform, though assuredly the merest trifle would give the victory to one organic being over another."[35] These concepts of equilibrium, ecosystem and later biodiversity form the scientific base for Ecocentrism.

2.3 Romanticism

The other components of Ecocentrism however, can be traced to the Romantic movement, consisting of the European Movement, and the American Transcendentalists, who developed the concept of Bioethic.

2.3.1 The European Movement

The Romantic movement was associated with the industrial revolution and the growth of the capital system in the eighteenth century, which caused a rapid change in social structure and morals. Human values were reduced to become a commodity in the newly capitalistic and materialistic society. Urban centres, towns and villages grew rapidly to become the new centres of a "civilized world". Production, invention, deprivation and poverty characterized this new form of society. The dominant class of land owners, aristocrats, found themselves challenged by the new bourgeoisie, resulting in a class clash. This shift of power contributed to

the development of the Romantic movement, which rejected the utilitarian standards and tended to replace it with more aesthetic standards.

The notion of glorifying primitive simplicity and savage man was supported by Jean-Jacques Rousseau. He believed that primitive life had values which no civilization could afford permanently to forfeit. This was supported by the fact that Western man found himself face to face with nature in his colonization of the new world. Commenting on Rousseau's philosophy L. Mumford (1973) argued that there is a difference between idealizing the noble savage and believing in a natural order. The latter belief is a salutary corrective to human willfulness and misunderstanding; but it was easy, almost inevitable, that in the eighteenth century the two should be confused.[36] In pursuit of simplicity, Rousseau called for living according to nature, through the retreat into rural environment. To him simplicity was represented as:

> "To live in the country and enjoy its solitude; to be free from minor obligations of attendance and courtesy; to be in harmony with the peasant and artisan, capable of sitting down at their table and enjoying the crude food; to use the empty hours for lonely rambles through the countryside; to gather plants for a herbarium and take pleasure in watching the process of growth."[37]

To live according to nature and to submit to its orders conflicted with the Baroque notion to control and force nature. This notion was shown in the neatly pruned trees and geometrically ordered gardens. The positive feeling towards nature, advocated by the Romantics reinforced the negative feeling towards society. According to Mumford (1973), Rousseau was the headwater from which a dozen mighty streams branched out through the nineteenth century including: Chateaubriand, Hugo, Thoreau and Melville.[38]

The harsh criticism of placing man as a commodity in the mechanical production system was rejected by Thomas Carlyle in *Signs of the Times* (1821):

> "The truth is , men have lost their belief in the Invisible, and believe and hope, and work only in the Visible ... Only the material, the immediate practical, not the divine and the spiritual, is important to us. The infinite, absolute character of virtue has passed into finite, conditional one; it is no longer a worship of the Beautiful and Good; but a calculation of the profitable." [39]

Romantics maintained that science was inadequate to explain all natural phenomena, and they revolted against rationalism and the Enlightenment. Consequently they drew attacks from rational philosophers, Russell was to write:

> "It is not the psychology of the romantics that is at fault: it is their standard of values. They admire strong passion, of no matter what kind, and whatever may be their social consequences. Romantics love is strong enough to win their approval ... but most of the strongest passion are destructive ... hence the type of man encouraged by the romanticism ... is violent and anti-social, an anarchic rebel or a conquering tyrant." [40]

Prior to the Romantic movement, Europeans, viewed natural areas as mysterious, evil and uncivilized land. On the other hand, farm land and symmetrical forms were considered as signs of civilization. This attitude was explained by William Gilpin, who suggested that most people had found wild country in its natural state totally unpleasing, "there are few who do not prefer the busy scenes of cultivation to the greatest of nature's rough production's."[41] A few years later Romantic temperament gained more support. Mountains were no longer monstrous excrescences but ideal examples of beauty and pureness. Pepper (1984) noticed that the word "sublime" began to be used to describe mountain scenery.[42] In 1802 Francis de Chateaubriand wrote: "I am nothing; I am only a solitary wanderer, and often I have heard men of science disputing on the subject of supreme being. But I have invariably remarked that it is in the prospect of the sublime scenes of nature that the unknown being manifests himself to the human heart." [43]

2.3.2 The American Transcendentalists

By the end of the seventeenth century large numbers of European immigrants were settling on the eastern coast of America. Later they expanded their colonies towards the west. R. Nash (1974) described the belief of those settlers: "Frontiersmen in the name of nation, race and God saw themselves as civilizing the new world, by destroying wilderness and transforming it into cultivated landscape."[44] Although Nash emphasized the "*wilderness* " as the main victim, we must realize that human beings were the first victims of this assault on the new world environment, which was carried out in the name of civilization and Christianity. In fact the massacres of hundreds of thousands of innocent people defending their land is stronger evidence when discussing the ethics of the European settlers, or so-called "Frontiersmen".

The notion of "Civilizing the Landscape", resulted in a wide destruction of the American wilderness and ecosystems. Millions of buffaloes were hunted for their skin or simply for sport. Millions of acres were stripped of forest to support the growing number of immigrants and flourishing industry. Few people at that time drew attention to the emerging ecological catastrophe. Between 1832-1839 George Catlin, an America painter, wrote his letters and notes of "*North American Indian*" their manners, custom, and conditions. Catlin's writings provoked the argument about nature value and the right of the Indian to live peacefully. Catlin's comment on a buffalo hunting experience, expressed his attitude towards nature's destruction by the white 'civilized man':

> "Nature has no where presented more beautiful or lovely scenes, than those of the vast prairies of the west; and of man and beast, no nobler specimens than those who inhabit them- the *Indian* and the *buffalo* and original tenants of the

> soil, and fugitives together from the approach of civilized man; they have fled to great plains of the West, and there, under an equal doom, they have taken up their *last abode*, where their race will expire, and their bones will bleach together." [45]

The concept of a National Park was first advocated and introduced by Catlin in his letters. Fifty years later the American Congress established the first park in North America, "Yellow Stone National Park", considered to be a landmark in the environmental movement. Catlin was to write:

> "And what a splendid contemplation too, when one (who has travelled these realms, and can duly appreciate them) imagines them as they might in the future be seen (by some great protection policy of government) preserved in their pristine beauty and wildness, in a *magnificent park,* where the world could see for ages to come the native Indian in his class attire, galloping his wild horse, with sinewy bow, and shield and lance, amid the fleeting herds of elks and buffaloes. What a beautiful and thrilling specimen for America to preserve and hold up to the view of her refined citizens and the world, in future ages! A *national park*, containing man and beast, in all the wild and freshness of their nature's beauty."[46]

Although Catlin showed sympathy towards nature, it is conspicuous that he maintained the colonial mentality towards the native Indian. He viewed them as "artifacts" in wild nature; his main aim was to protect them to be enjoyed by civilized "refined citizen". Although Catlin's writings originated the concept of protecting the wilderness, it was Thoreau's ideas and writings which molded the American transcendentalist movement.

Thoreau experimented with the idea of running away from "civilized society". For two years he lived along the side of Waldon Pond in Massachusetts. This experience focused his view towards nature's right to survive without man's intervention. He believed that nature reflects spiritual values and moral purity. He wrote: "I respect not his labors, his farm where everything has its price, who would carry the landscape, who would carry his God to market, if he could get anything for

him ... on whose farm nothing grow free ... whose fruits are not ripe for him till they are turned to dollars. Give me poverty that enjoys true wealth."[47] It was this kind of spirit which formed the base for the Bioethical morality, when nature should be respected in its own right to survive, in other words, protecting the *integrity* of natural landscape. The spiritual dimension can be recognized in the transcendentalist writings, where interaction with nature helps to purify the soul, and strengthen faith in God "the creator". Emerson, in *'Nature'* , called the woods "these plantations of God ... the currents of the universal being circulate through them. I am part or parcel of God."[48]

John Muir, a strong advocate for wilderness values, founded the Sierra Club in 1892, one of the most significant elements in the American environmental movement. Muir was influenced by the writings of Thoreau and Emerson, he believed protecting nature was almost an act of worship. Nature to him was "window opening into heaven, a mirror reflecting the creator". A few years later, a different perspective was introduced by G. Pinchot, where he challenged the pure romantic approach by Thoreau and Muir. He developed a new concept calling for management of the wilderness or a Conservationist rather than Preservationist philosophy. In 1910 he wrote "Conservation does mean provision for the future but it means also and first of all the recognition of the right of the present generation to the fullest necessary use of all the resources with which this country is so abundantly blessed."[49] This notion is one of the dominant environmental paradigms in American society today, which clearly conflicts with the supporters of the Bioethical morality, represented by the modern environmental movement.

2.4 Modern Environmentalism

This section review the current debate in the environmental movement, covering influential writings and theories.

2.4.1 Up Dating The Controversy

Once Aristotle said "What is common to the greatest number gets the least amount of care". This was the rationale behind the current environmental problems. People dealt with natural resources as a common commodity, therefore it was subject to abuse. The abundance of resources became a scarcity in our time, resulting in the concept of common vs. scarcity, which was addressed by Garret Hardin in his powerful essay "*The Tragedy of the Commons*."(1968). However, several writers laid the ground for the new argument, which was described as neo-Malthusians with reference to T. Malthus and his essay, where he addressed the issue of limited resources. This new tradition found that overpopulation, in combination with modern industrial techniques, would ultimately deplete resources.[50] One of the first influential writings was Samuel Ordway's (1953) *"Resources and the American Dream"* which was described by Paehlke (1989) as: "gently polemical rejection of the American Dream conceived as an (ever-higher level of living) ... Ordway articulated a 'theory of the limits of growth' for the consideration of all the scientists and industrials who have yet to come to grisps with the problem."[51] Hardin picked this up in his "Tragedy". He believed that the inevitability of global destruction predetermines the choices that humanity must make to ensure its survival. Hardin concentrated on the problem of controlling population growth, which he believed was detrimental for the future of this planet. "As a scientist I wanted to find a scientific solution, but reason inevitably led me to conclude that the population problem could not possibly be solved without repudiating certain ethical beliefs and

altering some of the political and economic arrangements of contemporary society."[52] The concept of "scarcity of the common to the common (community)" formed the basic theme in Hardin's arguments. He suggested that individual freedom should have some limits, in order to avoid the tragedy. O'Riordan (1976) suggested that Hardin is quite Malthusian in his reasoning, for he is sure not only that the common are finite, but also that everyone will inevitably pursue his own self-interest without concession, right up to the point of collapse.[53]

Such theories influenced a new direction. It is not only the integrity of nature and scenic charm which motivate the ecocentric, but also the availability of resources which, becoming ecologically scarce and unless regulated for the common interest of the common, a global disaster is inevitable. Hardin acknowledged that administrative laws are needed to discipline the abuse of natural resources, although it might bring the risk of abuse of such regulation by the administrators.[54] In addition to Hardin's works, two important documents supported the concept of scarcity and overpopulation, and provoked a wide controversy in political and scientific society. These are the *Blueprint for Survival* prepared by the Ecologist Magazine in January 1972, and the *Limits to Growth,* 1972. Although both studies adopted the same concept of resource scarcity vs. population growth used by Malthus, and several scientist including Hardin, their impact was very shocking, probably because of the pessimistic views expressed and a year later the emergence of the oil crises.

O'Riordan (1976) described the *Blueprint for Survival* as: "a very Ecocentric document preaching biotic rights, a shift to low-impact technologies and environmentally acceptable production processes."[55] The prescription of cure by the

Blueprint included: freezing the population growth, stopping polluting the environment by ceasing discharge of toxic waste, controlling the increasing appetite for energy, and concentrating population in dense urban areas. The *Limits to Growth* was based on a MIT computer study, used to forecast population growth in relation to resource availability. It touched on two points difficult to deny at that time: over-population and pollution with increasing attention from the media to both subjects. The impact of both documents was shocking, drawing attention to human behaviour and mismanagement of natural resources. However, the pessimistic spectacle was considered by many to be unrealistic. Martin (1975) suggested that "*doom books*" are counterproductive because they demonstrate the hopelessness of taking personal action.[56] The importance of these "*doom books*", was their shock therapy and contribution to the transition from conservationism to environmentalism, which began in the 1960s. Although conservationists supported the wise use of land via managerial methods, they were not very concerned about resource scarcity, "the right of the present generation to the fullest necessary use of all the resources."[57] It is fair to say that this view by G. Pinchot (1910) was not shared by all conservationist, nevertheless it was widely accepted in the political arena and within society.

Twenty years after the publication of the *Limits*, D. Meadows, D. Meadows and J. Randers, wrote "*Beyond The Limits* , global collapse or a sustainable future" (1992). The emphasis on limited resources still dominates the discussion. However, as the title indicates, the concept of "sustainability" was introduced. Sustainability seems to be the fashion of the nineties within the environmental movement, or perhaps the acceptable compromise between Technocentrism and Ecocentrism. *Beyond the Limits* defended the old *Limits*, as it was not a prediction of doom at all.

It was not about preordained future, it was about a choice. The authors again stressed that: "Once the population and economy have overshot the physical limits of the earth, there are only two ways back: involuntary collapse caused by escalating shortages and crises, or controlled reduction of throughput by deliberate social choice." [58] The current trend of sustainability is difficult to define. Each position on the political and environmental spectrum will result in different versions of sustainable policies. *Beyond The Limits* defined sustainability as: "A sustainable society is one that can persist over generations, one that is far-seeing enough, *flexible enough*, and wise enough *not to undermine* either its physical or its social systems of support."[59] . It seems that *Beyond the Limits* had learned the lesson over the last twenty years, and the message this time sounds more inviting, in contrast to the harsh warnings and doomsday message of the *Limits*. The sustainable society proposed looks for qualitative development, not physical expansion (this criteria will prove not to be achievable in the foreseeable future). It would be neither for nor against growth, rather it would begin to discriminate between kinds of growth and purpose of growth.

When analyzing the modern environmental movement, we can find that it is supported by scientists and liberal politicians, in addition to the educated middle class and entrepreneurs, who are worried for their beautiful suburbs and commercial investment. In other words it is not the moral (Ecocentric) nor the scientific (Technocentric) reasoning which motivates the majority of supporters of the environmental movement. It is another form of capitalist mentality concerned for its own interest, and achieving their goals: steady economic growth, clean suburbs, beautiful parks and camp sites, ... it make sense! They have to join the movement.

It is the self gain rather than the common interest of humanity, or as Hobbes puts it "Covetousness", the desire for personal wealth.

Many cases of dumping toxic (including radio active materials) waste was reported, from the land of industrial environmental movement, the "civilized countries" to the land of unconcerned, environmentally illiterate people, the "uncivilized countries". The corporate environmentalists are a dominant power in Western society nowadays and it is expected that they, in addition to the "concerned middle class", will form the most influential branch within the environmental movements in the 1990's. Politicians in industrial countries (the new technocrats of Solomon's House) strive to maintain economic growth to satisfy their electorates. This requires increasing consumption of scarce resources, which conflicts with the limited growth policy needed to maintain resource availability. In his speech at the launching of the space shuttle *Discoverer*, after the failure of the *Challenger*, President R. Reagan told the American people that it was essential to conquer space in order to overcome "war, scarcity and misery on earth."

2.4.2 Gaia and Deep Ecology

James Lovelock introduced the concept of "Gaia" in 1969. Later he developed this theory through two works "Gaia: A New Look at Life on Earth" (1979) and the "Ages of Gaia" (1988). This concept suggests that the earth with all its components including air, rocks, water and all living creatures are one big living being. Lovelock explained that:

> "At some special time in that stage, the newly formed living cells grew until their presence so affected the Earth's environment as to halt the headlong drive towards equilibrium. At that instance the living things, the rocks, the air, and the oceans merged to form the new entity, Gaia. Just as when the sperm merges with the egg, new life is conceived."[60]

Gaia rejected the belief that man is the centre of the earth. However, according to Lovelock, Gaia is not purposefully anti-human, but as long as we continue to change the global environment against her preferences we encourage our replacement with a more "environmentally seemly" species. In terms of its relation with religion, Gaia is not compatible with most religions, namely Judaism, Christianity and Islam. Lovelock argued that from early times humans worshipped the earth which later was imbedded in the term "Mother Nature". The name Gaia is a clear indication of the atheist attitude Lovelock promoted, where Gaia is the Greek earth goddess. Lovelock questioned: "What if Mary is another name for Gaia? Then her capacity for virgin birth is no miracle. She is ... conceivably a part of God. On earth she is the source of life everlasting and is alive now. She gave birth to mankind and we are part of her."[61]

The notion of viewing humans as no more than a plain member of the biotic system, represented the basic theme in the "Deep Ecology" movement. In 1973 Arnie Naess wrote "Deep Ecology" which appeared in the Inquirer. The movement criticized the shallow thinking of environmentalists which is characterized by their belief in the central position of humans. Fox (1989) expressed this view as "Even many of those who deal most directly with environmental issues continue to perpetuate, however unwittingly, the arrogant assumption that we humans are central to the cosmic drama, that essentially, the world was made for us."[62]

Although Gaia and Deep Ecology rejected the human central position on earth, they accepted the dominance of their thoughts, which brings the question how can you reject human power and accept human thought? They fall into the same trap

philosophers fall into throughout history, they admired and glorified their intellectual abilities and played down their physical properties. The rejection of religious beliefs and the creative power of God is another weak point in both theories.

On the other hand a "biocentric democracy" can find support in rich countries where a hands-off policy towards the third world finds some support. Allowing nature to take its course was expressed by deep ecologist Dave Foreman "When I tell people the worst things we could do in Ethiopia is to give aid - the best thing would be to just let nature seek its own balance, to let the people there just starve - they think this is monstrous"[63]

Young (1992) suggested that Deep Ecologists are concerned to distance themselves from extremism of Foreman variety, and have replied by arguing that the rights of humans in a biocentric democracy are not just no more than those of other species, but also no less.[64] Similar to other theories Deep Ecology blamed overpopulation as a cause of ecological crisis. What is appealing in this movement is the stress on the importance of moral and spiritual change as the necessary starting point for reform.

O'Neill (1993) suggested that there are two dominant approaches to human well being. The first:

> "holds that environmental problems can be accommodated within existing procedures of public decision making and by the standard economic positions that found them ... Thus, for environmental economists who approach ecological problems from within the standard neo-classical paradigm that underpins the main tool of policy making (cost benefit analysis)"[65]

He classified the second approach as the "deep green" or "deep ecology" which is popular with both environmental philosophers and green activists. According to O'Neill this approach argues that "dominant economic, political and ethical approaches to the environment cannot accommodate proper environmental concern: standard approaches are 'anthropocentric' or 'shallow', that they treat the non-human world as having only instrumental value for human satisfaction"[66]

The concept of deep ecology can not and will not be widely acceptable or applicable by human beings, because it deprives them of the right of well being and possibly survival. On the other hand the instrumental values of natural resources can not be ignored, nevertheless balancing human activities, and respect of God's creation can not be based on economic values. O'Neill (1993) rejected what he called "standard" and "deep" approaches to the environment. He claimed to establish an Aristotelian conception of well-being according to which "well-being should be characterized not in terms of having the right subjective states, as the hedonist claims, nor in term of the satisfaction of preferences as modern welfare economics assume, but rather in term of set of objective goods a person might possess."[67]

2.5 International perspective

The recent trend of Globalisation which implies dictating global standards and values is on the increase. This section review the international perspective of environmental issues

2.5.1 "Our Common Future" The Myth of Sustainability and The UN.

The end of the Second World War marked the beginning of a new era in international politics. This was represented by the establishment of the United Nations (UN). In 1972 the UN Conference on the Human Environment inspired a string of meetings emphasizing the right of people to adequate food and housing. The concept of sustainability was initiated by the "world conservation strategy" of the International Union for Conservation of Nature (IUCN) in 1980. The decision of the UN General Assembly to establish the World Commission on Environment and Development (WCED) in 1983 marked a major step towards establishing international environmental policy. This commission was considered to be an independent body, linked to but outside the control of governments and UN system. The general assembly mandate gave three objectives:[68]

- To re-examine the critical environmental and development issues and to formulate realistic proposals for dealing with them.
- To propose a new form of international co-operation on these issues that will influence policies and events in the direction of needed changes.
- To raise the levels of understanding and commitment to actions of individuals, voluntary organizations, businesses, institutes, and governments.

The Commission published its final report "'*Our Common Future* " in 1987. This report covered several areas including international economy, population and resource, food scarcity and energy choices. The main theme was developed around the concept of "sustainable development". According to *Our Common Future*: "sustainable development would ensure that development meets the needs for the present without compromising the ability of future generations to meet their needs."[69] The report specified that the concept of sustainable development implied limits, not absolute limits but limitations imposed by the *present* state of technology

and social organization on environmental resources and by the ability of the biosphere to *absorb* the effects of human activities.[70] The report suggested that sustainable development can only be pursued if population growth is in harmony with the changing productive potential of the ecosystem. This suggestion implies that the productive potential will be determined by the advancement in human (technological) power.

The proposed concept of sustainability attempts to bridge the gap between the concern of environmentalists and conservationist in terms of ecological impact and the need of the present generation for economic growth. This common ground suggests that the limits to grow is determined by the carrying capacity of a natural system. If this capacity was exceeded, the survival of the system would be endangered. The first obvious question to ask when implementing the concept of sustainable development is: who will mark the limits?. In many cases political jurisdiction and ownership does not match with ecological systems which require national and international coordination. From international perspectives the powerful will impose his will. Centralization of power (The New Leviathan) create the most difficult obstacle for international sustainable development. Combining economic growth with environmental protection sounds like a dream. In fact in the current international political system it is a dream. With the growing popularity of sustainability as a successful political slogan there is the tendency to abuse this concept. Each party will adopt a different understanding and definition of sustainability to serve his own interest. We must accept that sustainability scarified many substances to gain wide support. Worster (1993) suggested that like most popular slogans, sustainable development begins to wear thin after a while.[71] What is discussed now is the "degree of sustainability " rather than "sustainability".

In June 1992, the UN organized the UN Conference on Environment and Development (UNCED). To many it was known as the "earth summit". Unfortunately during this summit no real attention was given to third world problems. In fact the powerful industrial countries (G-7) dictated global affairs bearing in mind the priority of their own communities, rather than the interests of humanity as a whole . An excellent example of dictating environmental policies can be represented by the World Bank. In this institution decisions are based on voting power weighted by the economic and political power of donors. Such institutions as the World Bank and the International Monetary Fund (IMF) represent the interest of the rich. Most of the money borrowed goes back to industrial countries through the powerful and dominant multinational corporations owned by the capitalist "Mafia". The UNCED targeted population growth as a cause of the explosive growth in toxic chemicals. In reality the chemical industry promote the use of such toxic chemicals in the third world, including those prohibited in the country of production. The Indian writer Vandana Shiva , explicitly tells the story :

> A problem caused by an irresponsible chemical industry is converted into a problem caused by the fertility rate in the poor countries of the south ... The G-7 demand forest convention that imposes international obligations on the Third world to plant trees. But the third World cannot demand that the industrialized countries reduce the use of fossil fuel and energy. All demands are externally dictated- one-way-from North to South. The "global" has been so structured, that the North (as the globalized local) has all rights and no responsibility, and the South has no rights, but all responsibility. " Global Ecology" at this level becomes a moralization of immorality. It is devoid of any ethics for planetary living; and based on concepts not of universal brother hood but of universal bullying.[72]

2.6 Concluding Remarks

Despite the struggle, conflict and ideological differences, it is fair to say that with the exception of the extreme Left and extreme Right, evidence of evolving middle ground between the different modes of thought can be traced. This common

ground evolved around the increasing scientific evidence of resource depletion and polluted environment which suggests the tendency of Ecocentrics in accepting pragmatic reasons for protecting the environment, and of Technocentrics to worry about the next generation and future growth. Sustainability is a dominant element in this common ground. However, there is a continuous conflict in defining and applying sustainable development.

It is clear that the problem is not population growth, or scarcity of natural resources. It is human behaviour and attitude towards Nature. It is the lack of spiritual purity and the unlimited desire for expansion and power. The ethical base is fundamental for the success of any policy or law. It also must be recognized that this ethical base must have a spiritual dimension. Establishing environmental morality is not impossible, however it doesn't have to be shallow nor deep, Ecocentric or Technocentric, it has to be wise, holistic, and far sighted within the limits established by the Divine rules. To guarentee the survival of future generations, two main obstacles must be overcome: the irresponsible greed of the rich, and the lack of respect for God's creation which is common for most human beings. The concept of man as a steward and vicegerent must be propagated and incorporated in any policy or legislative Acts with regard to environmental issues.

The Islamic perspective of nature "Divine Ecology" has good potential to be used as an ethical base for formalizing environmental policies. This concept is more deep and caring than deep ecology and definitely is more sensitive than anthropocentric or Technocentric positions based on pure economic and scientific values. Divine Ecology is based on the believe of possible compatibility between Human rights of quality life and prosperity or (well being) and recognition of Nature

to be respected and cared for. It does not believe in pure economic reasoning for decision making, although rational processes can be used. Environmental morality and Divine limits even though by some irrational must be part of the process of formulating environmental policy. This concept of "Divine Ecology" was summed in the following Quranic verses:

> Do no mischief on the Earth after it has been set in order. Qur-an 7:85
>
> It is He (Allah) who has made you his vicegerent on earth. Qur-an 6:165

> O children of Adam! Wear your beautiful apparel;
> At every time and place of prayer : eat and drink :
> but waste not by excess, For Allah loveth not the wasters. Qur-an 7:31

The discussion in this chapter explained the ideological differences in human behavior towards nature and their role on this planet. Nevertheless concern for current and future status of nature can not be ignored by any ideological position, consequently several approaches to structure and formulate environmental policies were initiated. The main theme of them all is Nature and/or Human well being according to the ideological position.

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1 Jinn, the Arabic word was derived from Junna, the root of meaning of Junna, Yujannu, is "to be covered or hidden". Both Qur-an and Hadith describe the Jinn as a definite species of living beings. They are created out of fire. Like man, they may believe or disbelieve, accept or reject guidance.

2 For all Qur-anic verses used in this thesis, the English translation of the meanings and commentary, published by the Ministry of Hajj and endowments, Madenah, Saudi Arabia: 1410. H., 1990. was used. This translation and commentary was based on Ustadh Abdullah Yusuf Ali translation and commentary.

3 Faroq Al-Doswqi, **Mafaheem Qur-aniyah Hawl Haqiqat Alensan.** (The Qur-anic Understanding of the Human Truth) Almaktab Al Islami, Beireut, Lebanon: second edt. (in Arabic)1986. 1406 H. pp.17-18.

4 Emad Al-Deen, Khalil, **Al-Tabeah fe Al-fan Al-garbe wa Al-islami.** (Nature in Western and Islamic Art) Al-Resalah Co. Beireut, Lebanon: 2nd edt. (in Arabic) 1981. 1401HA p. 50.

5 Ibid., p. 50.

6 Quoted in Emad Aldean, Khalil , 1981. 1401H. p. 56.

7 Emad Aldean, Khalil, 1981. 1401HA p. 68.

8 Ibid., p. 69.

9 Faroq Al-Doswqi, 1986. 1406 HA p. 39.

10 Al-Hafiz B.A. Masri "Islam and Ecology" in **Islam and Ecology.** Fazlun Khalid and Joanne O'Brien (ed.) Cassel Publishers Limited, London : 1992. p.6.

11 Abul A'la Mawdudi, **Human Rights in Islam.** The Islamic Foundation, Leicester, UK: 1993 2nd edt. reprint p.10.

12 Ibid,.p. 10.

13 Ibid., p.10.

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15 Othman , Llewellyn, "Desert Reclamation and Conservation in Islamic Law" in F. Khalid & J. O'Brien (eds.) 1992. p. 89.

16 Quoted in Hesam Joma, 1991. p.136.

17 O. Llewellyn, 1992. p. 92.

18 Quoted in M. Samarrai, "Islamic Environmental Ethic, Law and Society" in **Ethics of Environment and Development.** Belhaven Press, London: 1990. p.196.

19 Othman Llewellyn, "Shariah - Values Pertaining to Landscape Planning and Design." in **Islamic Architecture and Urbanism**: A symposium. 5-10 January 1980. Ayden German (ed.) King Fisal University, Saudi Arabia: 1983.

20 David Pepper, **The Roots of Modern Environmentalism.** UK: Croom Helm Ltd., 1984. p. 237.

21 G. McConnell, "The conservation movement: past and present" in **Readings in Resource Management and Conservation**. I. Burton, R.W. Kates (ed.), Chicago: University of Chicago Press, 1965. p. 190.

22 David Pepper, 1984. p. 241.

23 T. O'Riordan, **Environmentalism.** London, UK: Point Limited, 1976. p. 11.

24 David Pepper, 1984. p. 46.

25 Ian L. McHarg, **Design With Nature.** USA: John Wiley & Sons, Inc. , 1992. p. 26.

[26] Hans Achterhuis, "Scarcity and Sustainability", in **Global Ecology.** Wolfgang Sachs (ed.), Halifax, Canada: Fernwood Books Ltd., 1993. p. 105.

[27] David Pepper, 1984 . p. 59.

[28] Hans Achterhuis, 1993. p. 106.

[29] When viewing the world as one community, Hobbes's thesis can be applied today, where the power is concentrated on one group "the industrial countries". This power is not represented only by the economic wealth, but more significantly by nuclear military power. The nuclear club strive to limit this power to the exclusive members, in order to maintain the authoritative power (the New Leviathan).

[30] Wolfgang, Sachs, "Global Ecology and the Shadow of Development" in **Global Ecology.** Wolfgang Sachs (ed.), Halifax, Canada: Fernwood Books Ltd., 1993. p. 3.

[31] Hans Achterhuis, 1993. p. 107.

[32] T. Hollingsworth, Introduction to Malthus's **Essay on the Principle of Population** 7th edt. 1872 text, London : Dent, 1973. Quoted in D. Pepper, 1984. p. 91.

[33] T. Malthus, **Essay on the Principle of Population.** book I, Chapter I, 7th edt. 1872. Quoted in D. Pepper, 1984. p. 93.

[34] Derek Wall, **Green History.** a reader in environmental literature, philosophy and politics. New York, NY: Routledge, 1994. p. 104.

[35] Quoted by D. Pepper, 1984 . p. 102.

[36] Lewis Mumford, **Condition of Man** New York: Harvest / HBJ, publishers, 1944 (1973) p. 276.

[37] Ibid., p. 278.

[38] Ibid. , p.278.

[39] Thomas. Carlyle, "Signs of the Times." in **The work of Thomas Carlyle in Thirty Volumes II.** London: Chapman & Hall, 1899. Quoted in D. Pepper, 1984. p. 77.

[40] B. Russell, **History of Western Philosophy** London: Unwin, 1946. p. 656. Quoted in D. Pepper, 1984. p.77.

[41] Quoted by D. Pepper, 1984 . p. 79.

[42] D. Pepper, 1984. p. 80.

[43] Quoted by D. Pepper, 1984. p. 81.

[44] Roderick Nash, **Wilderness and the American Mind** New Haven, Conn: Yale University Press, 1974. p.74.

[45] George Catlin, "North American Indian" in **The American Environment. reading in the history of conservation.** R. Nash (ed.) , Mass: Addison Publishing Company, 1968. pp. 7-8.

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[47] H. Thoreau, **Waldon** 8th edition, New York : Collier Books, 1974. p. 145. Quoted in D. Pepper, 1984. p. 82.

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[51] Ibid. p. 46.

[52] G. Hardin, **Exploring New Ethics for Survival** : the voyage of the spaceship beagle, New York : Viking Books, 1972. p.ix.

[53] T. O'Riordan, 1976. p. 29.

[54] G. Hardin, "The Tragedy of The Common" in **Science** 162, 1968. p. 1247.

[55] T. O'Riordan, 1976. p.54.

[56] Quoted by T. O'Riordan, 1976. p. 61. emphasis added.

[57] G. Pinchot, 1910. Quoted in D. Pepper, 1984. p. 82.

[58] D. H. Medows, D.L.Medows. and J. Randers, **Beyond The Limits:** global collapse or a sustainable future. London: Earthscan Publication Limited, 1992. p. 189.

[59] Ibid. , p. 209. emphasis added.

60 James Lovelock, **The Ages of Gaia : A Biography of Our Living Earth.** Norton, New York: 1988, p.41.

61 Ibid., p.206.

[62] Quoted in John Young, **Post Environmentalism.** Belhaven Press, London: 1992. p. 126.

[63] Quoted in John Young, 1992. p. 128.

[64] John Young, 1992. p. 129.

[65] John, O'Neill. **Ecology, Policy and Politics. Human well-being and the natural world.** London, UK: Routledge, 1993. p.1.

[66] Ibid. p.2.

[67] Ibid. p. 3.

[68] WCED, **Our Common Future.** Oxford: Oxford University Press, 1987. pp. 3-4.

[69] Ibid., p. 8.

[70] Ibid., p. 8.

[71] Donald. Worster, "The Shaky Ground of Sustainability." in **Global Ecology** Wolfgang Sachs (ed.), Halifax, Canada: Fernwood Books Ltd., 1993. p. 133.

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Chapter Three

Environmental Politics and Policies

Introduction

Current political cultures are expressed in the wide range of different values influencing the process of decision making across the globe. The final shape of any policy represents the result of comparison between value conflicts during this process. These conflicts and the resulting process of policy making will be discussed in this chapter, in addition to examples of national environmental policies from different countries.

The first section discusses the economics of natural resources, and how modern economic theories affect environmental policies. The process of decision making and policy formulation requires the availability of alternative policies and methods of assessment. Several methods are discussed in the second section. These are: Cost Benefit Analysis (CBA), Environmental Impact Assessment (EIA), Risk Assessment (RA), and Strategic Environmental Assessment (SEA).

The third section begins with a discussion of the public environmental concern and the culture of participation, which form the base of any political pressure. It then reviews decision making theories, followed by a discussion of the process of environmental decision making. Policy formulation, instruments, and implementation are discussed in the third and fourth part of this section. The role of environmental law is discussed in the fourth section. The fifth section reviews

several case studies in environmental policies, including: The USA, The UK, Denmark, The Netherlands, and The Sultanate of Oman.

3.1 The Economics of Natural Resources

In the current global political culture economic values have a strong influence when environmental issues are discussed. The notion of market economy which was presented to the Eastern European block in the early nineties as the ideal way for salvation, gives us a clear indication of the prevailing global political culture. The concept of the dominant global authoritative power the *New leviathan* which was discussed in the pervious chapter is represented by the enforcement of the capitalist ideology, where the power of the market is one of many faces of the *New Leviathan*. The basic ideology of market economy is simple, "if it is profitable it is acceptable." The following section discusses the economics of natural resources and the influence of the economic theory in formalizing environmental policies.

Economists have their own views of the world, for them natural resources are defined as those economic factors in production or consumption which owe their origin and existence to natural phenomena, or to processes that occur autonomously in nature.[1] Heal (1981) noted that "when economists talk about resources and resource allocation, the words are being used in their broad sense to include both resources, human and capital resources available to a society."[2] The economic view of natural resources is built around the concept of pricing i.e. the price of utilizing the natural resource. McInerney (1981) suggested that the basic condition to be satisfied is one of balancing the true social cost and benefits of current consumption, in other words current consumption should not continue beyond the point where the net benefit derived from the last unit equals its user cost. The key to an optimal

pricing policy is the correct measurement of the inter temporal social costs of resource consumption.[3]

3.1.1 Economic Theory and Nature

The traditional view of natural resources as a free public commodity, have changed in the last century. Natural resources, including scenic areas and wildlife habitats, are now seen as part of the national assets. Park (1986) argued that this change formed the basis of environmental policy where "intervention has been accepted as essential, and environmental management and policy formulation have been incorporated into national political decision making."[4] Nevertheless for economists natural resources are one element in the economic formula. As a result they developed Cost-Benefit Analysis (CBA) to evaluate environmental degradation against economic growth. When discussing the influence of modern economic theory on the environment Park (1986) suggested that the economic view towards the environment consists of four main elements:[5]

> **1-** Material wealth and economic growth generally assume a higher priority than environmental protection or improvement in national political decision making.
>
> **2-** Conservation and re-cycling of resources are adopted only where they can be defended as viable (or cost effective) on purely economic grounds.
>
> **3-** Many aspects of decision making are founded on economic cost-benefit analysis, although many aspects of the environment (e.g. survival of rare species, and availability of wilderness) cannot be measured in purely economic terms.

4- In the pursuit of material wealth, the environment is not often regarded as a free good to be used at zero price. Thus, many aspects of productive activity seek to externalise disbenefits (such as profit). The disbenefits are externalised by passing them on to the society at large, where the benefits are internalised and thus enjoyed solely by the producer.

Economic activities are based on natural resources (raw materials), exploiting these resources and utilising them in the production process, produce residuals, which sooner or later will have an impact on the environment. This relation which resulted from the elementary functions of production, distribution, and consumption leads to continuous conflict between environmentalists and economists. In may cases the belief in the efficacy of the market mechanism is a fundamental principle of the policy prescription of much modern environmental economics.[6] This was evident in the work of Adam Smith (1776) "*An Inquiry into the Nature and Causes of the Wealth of Nations.*" The current stage of the economic theory is dominated by the theory of welfare economics which attempt to provide a framework in which normative judgments can be made about alternative configurations of economic activity.[7] This requires the consideration of ethical criterion. However, as Perman (1996) noted "Economists have attempted to find a method of ranking different states of the world which does not require the use of social welfare function, makes little use of ethical principles, but is nevertheless useful in making prescriptions about resource allocation."[8]

3.1.2 Economic Instruments

One of the main results of environmental economic theories is the use of economic instruments as a complement to other policy instruments such as regulations and co-operative agreements with industry. The economic instrument

can be defined as an instrument that affects cost and benefits of alternative actions open to economic agents, with the effect of influencing behavior in a way that is favourable to the environment.[9]

The objective of economic instruments is to ensure an appropriate pricing of environmental resources in order to promote an efficient use and allocation of resources. What economists are trying here is to find a price for the environmental goods in order to treat them equally with other production factors. The OCED publication 'Environmental Policy' (1991) suggested that "Correct pricing in the case of pollution implies that in the situation of an optimal use of the environment, the marginal pollution reduction costs are equal to the marginal environmental damage cost."[10] However, it admits that there is a lack of information to specify *correct environmental price*. Then:

> "A second best approach is to equalize marginal costs of environmental production by putting a price per unit on pollution discharged ... such environmental price could be incentive environmental charges. Dependent on the circumstances, least-cost solutions can also be reached by tradable pollution allowances. This cost-saving potential is a major characteristic of economic instruments."[11]

Three types of economic instruments are commonly used as part of the environmental policy instrument:

1- *Environmental charges.* A charge on any action causing negative effect on the environment . e.g. Emission charges: the charges on the discharge of pollutants into air, water or soil, based on quantity and quality of pollutant.

2- *Marketable permits.* Environmental quotas, allowances or ceiling on emission levels that, once initially allocated by the appropriate authority, can be traded subject to a set of prescribed rules.

3- *Deposit-refund systems.* A deposit (charge) levied on a potentially polluting product, to be refunded when the product is returned to storage, treatment or recycling.

The choice of an instrument will depend on what is acceptable by the public and the political circumstances. Verbruggen (1993) noted that "The distribution of the cost of implementation of a policy instrument often determines its viability. If a majority of voters, or the members of some powerful or vocal group of voters incurs significant financial coast from some policy instrument, it may be voted down."[12] Although the economic approach to the environmental problems is widely acceptable by many governments, it should be emphasised that economic instruments do not in themselves represent a comprehensive mitigation. The efficiency of the overall policy framework and enforcement of implementation can be critical when applying economic instruments.

3.2 Assessment Techniques

Decision making requires the availability of alternative policies and actions. Such alternatives are based on different tools and methods of assessment. The type of methods used will affect the direction and result of policy making processes. Several assessment methods are commonly used to facilitate the decision making process and policy formulation. This section will review the following methods as the most relevant to environmental policy making:

Cost Benefit Analysis **CBA**; Environmental Impact Assessment **EIA**; Risk Assessment **RA**; and Strategic Environmental Assessment **SEA**.

3.2.1 Cost-Benefit Analysis (CBA)

Determining environmental policy requires evaluation of social, economic and ecological factors. CBA was developed to measure and evaluate environmental degradation and impact in relation to the over all economic benefit. According to Ahmad (1983) CBA is a method of organizing information and data about decision alternatives. Ideally all relevant information is collapsed into a single *monetary measure* ... the purpose of CBA is to estimate the real cost of making use of the environment, to identify where inefficiencies exist and to evaluate proposals for action on the part of industry, government or consumers to make the overall system more *efficient.*[13] When discussing the cost of utilizing the environment from the economic point of view, externalities must be recognized as an important factor. Externalities can be defined as the situation where the actions of one agent producer or consumer, affects the welfare of other agents through channels other than price, e.g. if a factory produces hazardous fumes affecting the adjacent residential neighborhood the cost of health care and reduction on property price is not included in the production cost. However it is passed on to the society. CBA claims that externalities can be measured and included in the process of analyzing economic efficiency. Measuring the affect of externalities can be used for compensation purposes. O'Riordan (1981) noted that "Many traditional economists expect that most people are willing to be *bribed* to accept a certain degree of environmental nuisance."[14]

When discussing the judgment of CBA, O'Riordan (1981) suggested that different points of views can be recognised. One of them suggests that CBA simply cannot do what it claims to do, namely to take into account and balance all the distributional outcome of any proposal, both in time (among present and future

generations) and space (i.e. over people and places).[15] Other views suggest that no matter how sophisticated and ingenious its computation, CBA can only lead to absurdly distorted conclusions, because the nature of the judgment that must be made defies " technical" economic analysis.[16]

Several constrains and obstacles in applying CBA can be noticed, including inadequate data, valuation of benefits, and avoidance of double counting. However, Ahmad (1983) argued that although these problems might at first seem to cast doubts upon the value of CBA, some of these problems will affect any decision making aid and should not, therefore, count against CBA.[17] On the other hand, O'Riordan (1981) explained that "limitation imposed by lack of data, inadequate predictive capabilities, or inability or unwillingness to calculate the full extent of distributional impacts restrict the validity of the technique"[18]

Despite the weakness in CBA as a tool to evaluate alternatives, it gained support from politicians and economists because it facilitated environmental decision making by giving clear mathematical solutions. Lorain-Smith (1982) argued that environmental decision making is implicitly (if not explicitly) founded on economic criteria, hence, the cost of environmental protection must be weighted against the cost of other goods and services that consumers want, given that consumers have a finite amount of resources (especially monetary resources) to allocate in fulfilling their desires.[19] Although the concept of economic efficiency in formalizing environmental policy considers the public good in general terms, it underestimates the long term effect of such good i.e. the price to be paid by the next generation, in addition to frequent failure to agree upon a price for non economic natural resources such as scenic values and rare wildlife habitat. CBA is not the

magic formula advocated by economist and politicians to solve the dilemma of utilizing natural resources. However, it can be used as one of several guiding tools in policy formulation, but not as a decisive measure as to what extent natural environment can be utilized.

3.2.2 Environmental Impact Assessment (EIA)

The concept of environmental impact was initiated through the National Environmental Policy Act in the United States of America, NEPA (1969). This process of predicting and forecasting action impact upon the environment was widely used in other countries. e.g. Canada (1973), Australia (1974), West Germany (1975), France (1976), and Japan (1984). EIA seeks to prevent and reduce environmental degradation by giving decision makers better information about the consequences that development actions could have on the environment, but can not of its self, achieve the prevention of negative actions. From a rationalist point of view the rational behind EIA is to identify costly and undesirable effects, and to modify projects in the design stage.

The structure of the US environmental impact assessment legislation (National Environmental Policy Act 1969) is shown in Fig. (3.1).

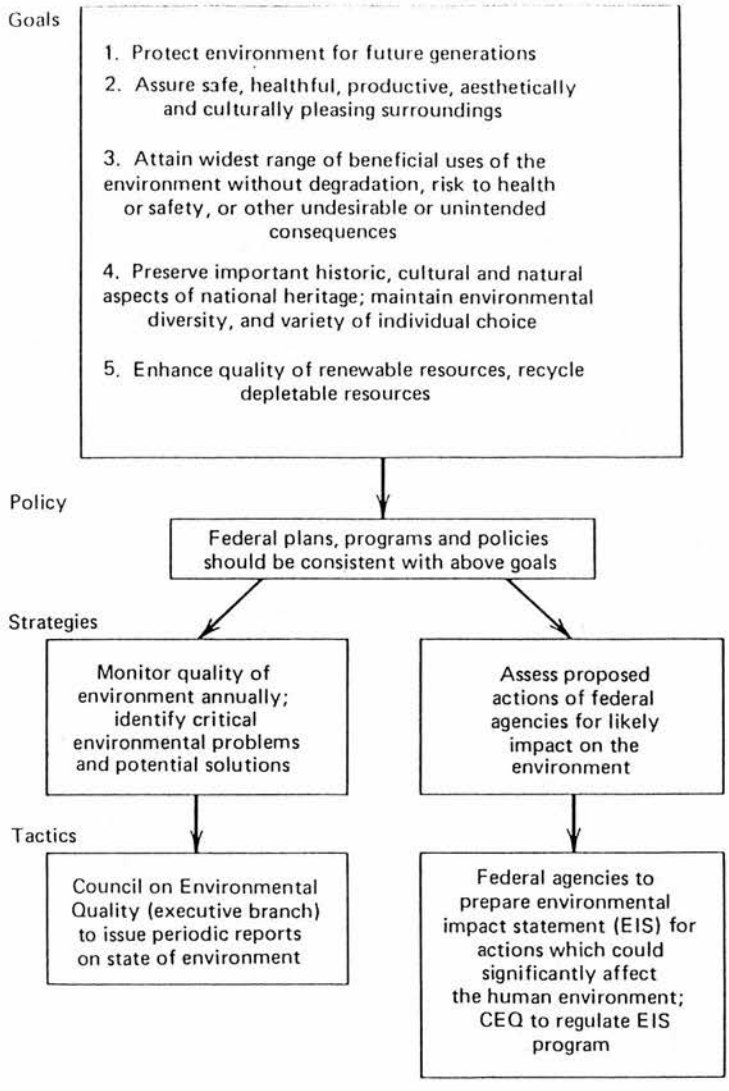

Figure 3.1 The US Environmental Impact Legislation (National Environmental policy Act. 1969.)

Source: W. Westman, **Ecology, Impact Assessment, and Environmental Planning.** 1985. p. 31.

Based on Munn's (1979) definition Wathern (1990) defined EIA as a process for identifying the likely consequences for the biological environment and for man's health and welfare of implementing practical activities and for conveying this information, at a stage when it can materially affect their decision, to those responsible for sanctioning the proposal.[20] Westman (1985) noted that the term "impact" can be used to refer to the human activities and its affect on the ecosystem or to the effect and its significance to human society. On the other hand "assessment" according to Westman refers to analyzing and evaluating impact on ecosystems.[21] Fig. (3.2) shows Westman's diagrammatic interpretation of the phrase "ecological impact assessment" .

The process of EIA can vary according to the political and institutional structure. However, the basic structure is similar in most countries. The first obvious step is to define study goals in order to direct the process along the right track. Accordingly a basic data and baseline condition should be collected and established. At this stage the availability of an ecological inventory can play a decisive role in the success of the EIA process. The second step should identify, predict and assess the proposed action impact, in order to identify and develop alternative actions and mitigation. Wathern (1990) suggested that this stage should record all changes in environmental parameters resulting from implementation in order to compare it with the situation likely to occur without the proposal.[22] The third stage should combine the previous work to draft an Environmental Impact Statement (EIS), which includes alternative actions, mitigation, decision on the proposed action and monitoring mechanism.

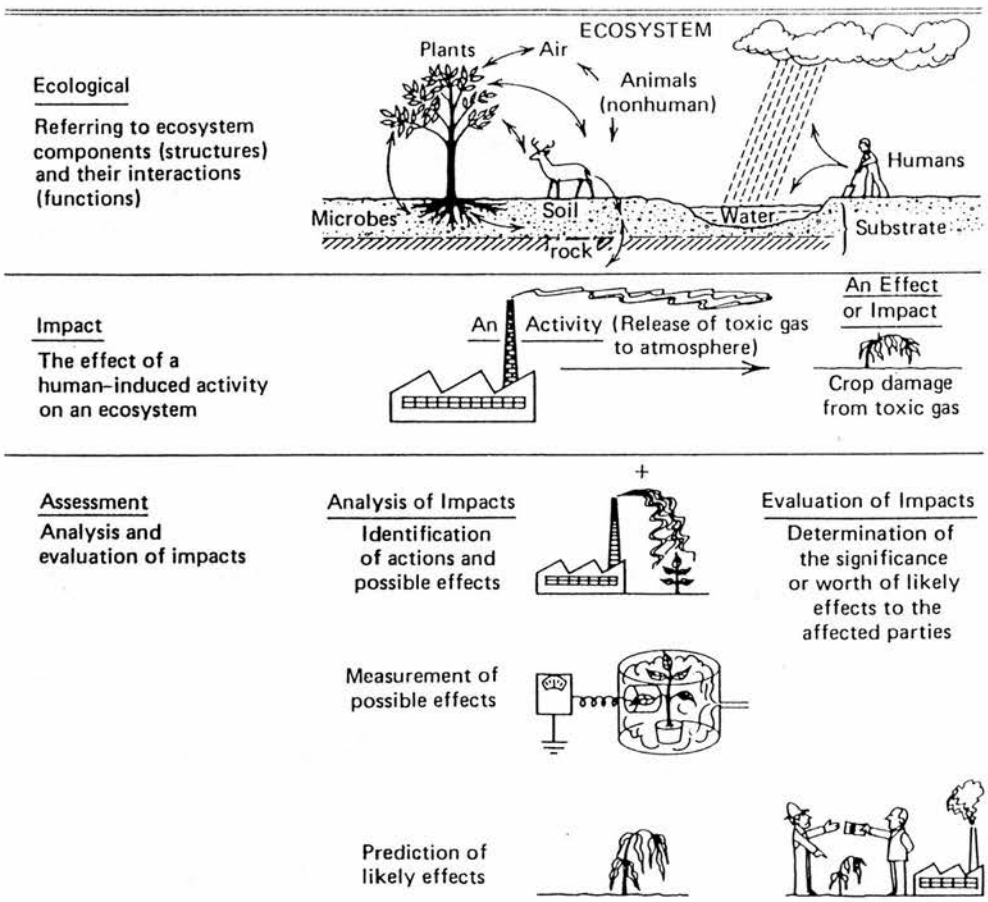

Figure 3.2 Diagrammatic Interpretation of The Phrase "Ecological Impact Assessment"

Source: W. Westman, **Ecology, Impact Assessment, and Environmental Planning.** 1985. p. 4.

Westman (1985) divided the process into the following seven phases:[23]

1- Defining study goals
2- Identify potential impact
3- Predicting significance impacts.
4- Evaluating significance finding.
5- Considering alternatives to the proposed action.
6- Decision making.
7- Post-impact monitoring.

Wathern's (1990) flow diagram for the main component of an EIA shows similar components to Westman's phasing (see Fig. 3.3). It should be noticed that the most appropriate mitigation are not known until the action is taken. Therefore, the EIS should involve a continuous monitoring procedure to modify mitigations as the action takes place. The content of the Environmental Impact Statement (EIS) will depend on the type of action and EIA legislation requirement. According to the US federal proposal required by the Council of Environmental Quality CEQ (1978), EIS content should include:[24]

Summary
Statement of purpose and need
Alternatives including proposed action
Discussion of all options considered
Identification of agency-preferred alternative
Discussion of mitigation measures
Affected environment
Baseline environmental description of area affected by each alternative
Environmental consequences
Environmental impact of each alternative
Unavoidable effects
Relationship between local short-term use of environment and enhancement of long-term productivity
Irreversible and irretrievable commitment of resources
List of preparers

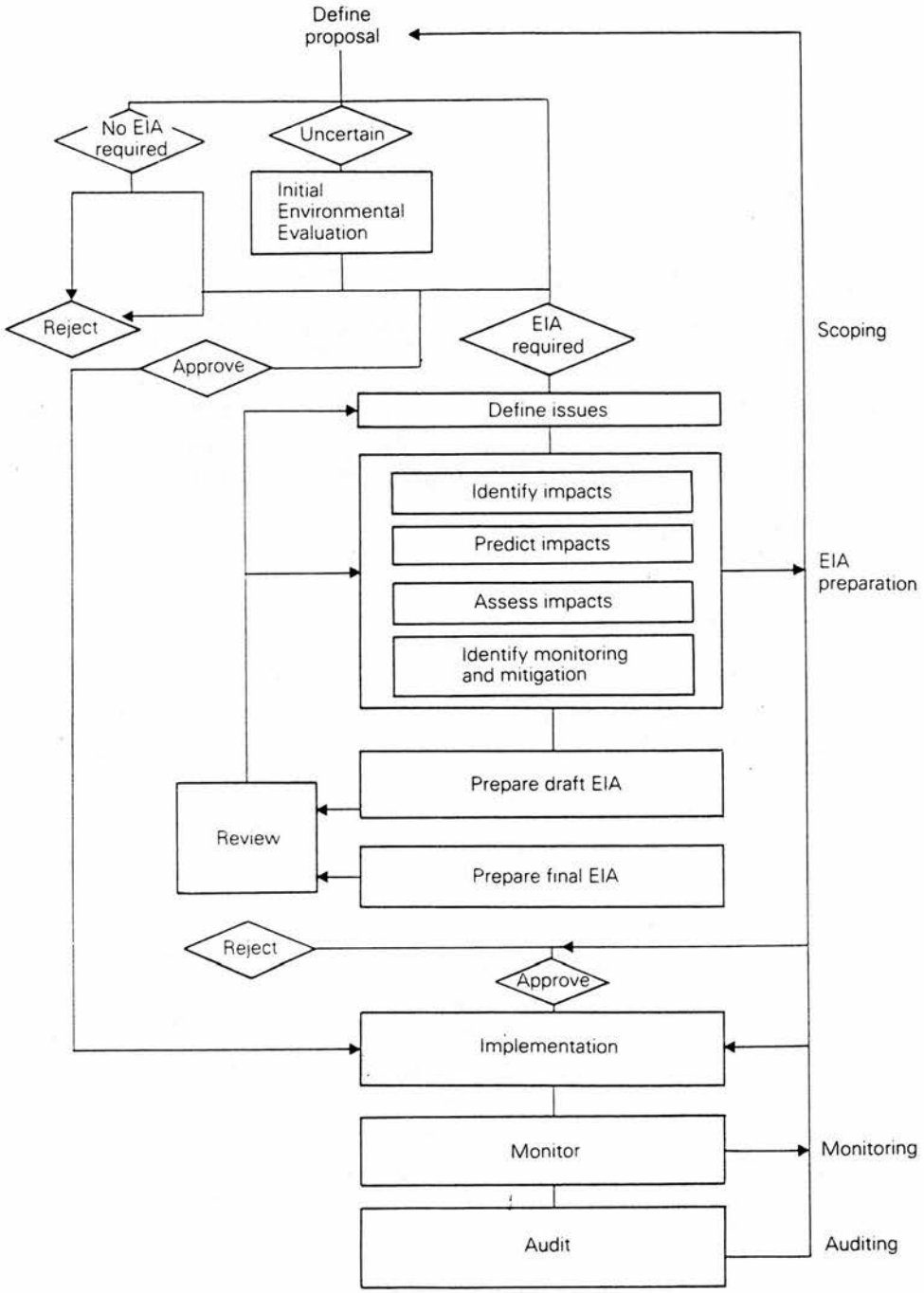

Figure 3.3 Environmental Impact Assessment Flow Diagram.

Source: P. Wathern, **Environmental Impact Assessment.** 1990. p. 18.

Although EIA can be decisive in the decision making process, decision makers have to balance many factors before recommending specific alternatives. Several deficiencies can be recognized in the EIA process, mainly institutional and political. However, technical constraints can reduce the efficiency of the process. To give an example the lack of an ecological inventory and consequently uncomprehensive baseline study can limit the use of EIA in the decision making process in many third world countries. Another technical deficiency is the under development of predictive capabilities especially with the increasing number of diverse and new ecological problems. On the other hand, a US Environmental Protection Agency study (EPA, 1980) suggested that post action monitoring proved that mitigation standards were efficient in reducing negative action impact. The same study suggested that the cost of EIA preparation and delay were more than covered by the savings accruing from modification to individual projects identified during the EIA process.[25] In a recent international study, Sadler (1996), the effectiveness of EIA was studied and evaluated. The study gave a comprehensive review of the process and its application in different countries and concluded by suggesting that:[26]

> "most steps and activities of the EIA process are generally performed satisfactorily or better. The "3r's" of rigorous analysis, responsive consultation, and responsible administration are standard principles in well-established EIA systems. Equally, the process is recognised as addressing a range of considerations and providing clear, consequential information for decision making."

One of the major criticisms of EIA is the lack of public involvement in the process. Wathern (1990) commented on the EPA study "Superficially there appears

to be ample opportunity for public involvement. More than 95 per cent of EPA projects involved public meetings ... (However), people considered such meetings an inadequate mechanism for incorporating their concern to a project."[27] Public involvement can also make the process lengthy and expensive. In most cases public participation occurs during the scoping stage where all concerned parties meet to identify at an early stage the most significant environmental issues and impacts. The degree of public participation can be affected by the political culture, which differs from one country to another. Andrews (1990) argued that "EIA was explicitly conceived as an administrative reform to force government agencies to become more publicly accountable. Authors of the legislation perceived agencies not as systematic rational decision makers, but as narrow advocates of particular mission at the expense of other values and consequences."[28]

EIA legislative Acts can be part of the constraints on EIA effectiveness. e.g. the information required in some cases are limited, which can omit some potential impacts from the study. In the case of the UK, the EIA system does not require the assessment of noise, energy consumption or radioactive emissions.[29] In other cases some projects, such as defense and security related projects; agricultural and afforestation projects, are exempted from submitting EIS. Continuous review of the EIA process is needed to cover the deficiencies. In the USA the Council of Environmental Quality (CEQ) issued regulations which require that a final EIS must be accompanied by a record of decisions detailing how the EIS was used in arriving at a decision. In addition, it should indicate which alternative is preferable on environmental grounds.[30] Such regulations can facilitate the work of decision makers who have to consider a wide range of socio-political and economic factors, in addition to national interest, which might conflict with EIS recommendations.

3.2.3 Risk Assessment (RA)

The term "risk" usually used to refer to the probability of occurrence of certain dangerous actions or exposure to danger, as a result of certain activity which is usually safe. The process itself of Risk Assessment (RA) is used with other assessment methods in the rational decision making process. RA can be defined as a scientifically based report predicting the probability and magnitude of a particular catastrophic event, as the result of human activities. Wathern (1990) noted that "RA tend to be highly numeric appraisals; they are essentially statistical analyses of likely events based upon certain probabilities of occurrence."[31] Covello and Mumpower (1985) defined RA as "A study that provides quantitative measures of risk levels, where risk refers to the possibility of uncertain adverse consequences ... most fundamentally estimates of possible health and other consequences."[32]

This analysis of the magnitude and probability of risk can cover a wide area of environmental issues such as: offshore and terrestrial oil wells and developments; siting of hazardous industrial facilities; the use of dangerous herbicides and pesticides in agricultural projects; disposal of municipal and hazardous waste; and the recently emerging biotechnology. Such application is applicable to most developed and underdeveloped countries. A wide range of scientific disciplines are included in the process of Risk Assessment including: toxicology, epidemiology; bioscience; engineering and statistical decision making.

In addition to its use in decision making processes RA is also used in insurance; chemical industries; energy production; and electrical firms. Andrews (1990) explained that: "Unlike Environmental Impact Assessments, Risk

assessments are not generically required by statute and, therefore, have not been produced under any common set of protocols or administrative guidelines."[33] In many cases RA concentrated on human health e.g. potential mortality rate due to cancer caused by a catastrophic event or industrial emission. In a recent study, the US National Science Foundation, recommended the use of risk assessment to assess the potential hazard of biotechnology application.[34]

The process of RA stresses formal qualification of probability and uncertainty. It typically includes a determination of the type of hazard posed, together with estimates of the probability of their occurrences.[35] The quantitative nature of RA drew criticism to the process. Hattis and Smith (1985) warn that current risk assessment practice relies on unduly narrow statistical methods for quantifying risk, at the expense of other lines of reasoning that may be more valid.[36] Similar to other methods used during the process of policy making, RA confronts a powerful temptation to discount issues that remain uncertain or disputed, in order to build a confident justification for a decision. The lack of research work to assess the possible health hazard of new technologies can reduce the validity of RA.

The factor of uncertainty should be acknowledged in the process, even if it cannot be quantified. Hattis and Smith (1985) argued that "Despite its apparent rigour, risk assessment like EIA, is ultimately a very soft process of artful theorizing to construct an appropriate picture of the world for informing specific choice." [37] As is the case of all quantitative prediction methods RA has the choice either to force non-quantified parameters into numerical processes, or ignore it. On the other hand, Wathern (1990) suggested that decision makers may treat such highly quantified assessments reverentially.[38]

Scientists and statistical analysts should aim to clarify decision makers understanding of different alternatives and to present the best possible prediction of the expected hazard. When discussing the role of EIA and RA within the administrative bodies, Andrews (1990) argued that RA grew out of a broad movement towards expanded use of rational techniques for analysing and justifying governmental decision. It developed as a management technique in the hands of the experts. It was used in part to improve decision making with respect to engineering technologies and in part to justify those decisions against public fears and opposition.[39] Developing legislative Acts for RA is long overdue in many countries. The process can be vital in siting industrial and energy projects. Public access to RA results can increase the pressure on government agencies and widen public accountability in environmental issues.

3.2.4 Strategic Environmental Assessment (SEA)

The limited application of EIA to project scale activities has always been a major deficiency in evaluation methods used in environmental decision making and policy formulation. SEA has emerged as an assessment process to fill the gap left by other methodologies. This process is concerned with assessing environmental impact of policies, plans and programmes (PPP). In other words, it can be considered as an early assessment method in the decision making process or as the application of EIA at the level of policies, plans and programmes. Therivel (1992) defined SEA as: "The formalized systematic and comprehensive process of evaluating the environmental impact of a policy, plan or programme and its alternatives, including the preparation of written reports on the findings of the evaluation, and using the findings in public accountable decision making."[40] SEA should cover the inability of EIA to anticipate the impact of development policy

proposals, and to direct them away from sensitive and fragile areas, in addition to a more active approach to the cumulative impact of several projects which are rarely dealt with in the EIA process. An international study to evaluate the effectiveness of environmental assessment, Sadler (1996), defined the term SEA as: describing a systematic process of addressing the environmental consideration and consequences of proposed policy, plan, and programme initiatives. It is a decision-aiding process that can be and should be applied flexibly to the decision cycle.[41] The justification of such a process according to Sadler (1996) is to integrate environmental and sustainability factors into the mainstream of development policy making as called by the Brundtland Commission and Agenda 21.[42]

SEA is used in several countries. The Dutch government set up a statutory SEA system in 1987, and New Zealand have required the preparation of SEA since late 1991. The European Community's EC Directive General XI produced a proposed directive on SEA in early 1991, and the UK's Department of the Environment has recently recommended procedures resembling those of SEA.[43] The strategic nature of the process requires it to consider the consequences of development policies in the early stage of the planning process and to emphasise preventing environmental degradation and damage.

Therivel (1992) summarized the objectives of SEA as:[44]

* To enable consistency to be developed across different policy sectors, especially where trade-offs need to be made between objectives;

* To ensure the full consideration of alternative policy options, including the "do-nothing" option, at an early time when an agency has greater flexibility;

* To ensure that the cumulative , indirect or secondary impact of diverse multiple activities are considered, including their unintended consequences;

* To enable adverse environmental impacts to be anticipated and hence avoided or prevented;

* To ensure that the environmental impact of policies that do not have an overt environmental dimension is assessed;

* To obviate the needless reassessment of issues and impacts at project level where such issues could more effectively be dealt with at a strategic level, and offer time and cost saving;

* To provide a publicly available and accountable decision making framework;

* To ensure that environmental principles such as sustainability and the precautionary principle are integrated into the development, appraisal and selection of policy options;

* To give proper place to environmental consideration in decision making vis-a-vis economic and social concerns, given that in some contexts they may be traded off against each other.

In the United States SEA, which is also referred to as Area wide Environmental Impact Assessment, or Programmatic Environmental Impact Assessment (PEIA) was based on NEPA, 1970. The process can be interpreted from the NEPA requirement of federal agencies to prepare a detailed statement on the environmental impact of every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment. The need of this approach was recognized from the cumulative impact of several projects and/or policies for a long period of time and at the same ecological zone, which is not considered in the EIA process. The Council on Environmental Quality (USCEQ, 1978) noted that EIA may be necessary for the following actions:[45]

1- Adoption of official policy, such as rules, regulations and interpretations.
2- Adoption of formal plans, such as official documents ... which guide or prescribe alternative use of federal resources.

3- Adoption of programmes, such as a group of concerted actions to implement a specific policy or plan.
4- Approval of specific projects.

The last point was applied more effectively than the first three. However this early interpretation of NEPA requirements established the base of Strategic Environmental Assessment. The Environmental Protection Agency (EPA) prepared about 320 Programmatic Environmental Impact Statements (PEIS) between 1979 and 1989.[46] The CEQ also required that agencies should evaluate proposals:[47]

1- Geographically, including actions occurring in the same general location, such as a body of water, region, or metropolitan area.
2- Generically, including actions that have relevant similarities, such as common timing, impact, alternatives, methods of implementation, media, or subject matter.
3- By stage of technological development.

Expanding the scope of EIA to include policies, plans, and programmes was required by the California Environmental Quality Act (CEQA,1986). Therivel (1992) suggested that California's SEA system is likely to be the most developed and operational system in the world. The CEQA requires public agencies to prepare SEAs for a series of linked actions, including projects that are related in location, the kind of action, or under the same rules and regulations. SEA in California was applied to city and county plans, community plans, development plans, water management plans, airport master plans, university master plans, transportation plans, air quality regulation, and hazardous waste management.[48] The California Environmental Quality Act, 1986 cited five advantages of applying EIA to plans, policies, and programmes. It can:[49]

1- Provide an occasion for a more exhaustive consideration of impacts and alternatives than would be practical in an EIA on an individual action.

2- Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis.

3- Avoid duplicative reconsideration of basic policy considerations.

4- Allow the Lead Agency to consider broader policy alternatives and programme wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts.

5- Allow reduction in paperwork.

In most cases the agency concerned with setting and drafting the policy, plan, or programme will be also responsible for preparing SEA of the proposed policies and plans. e.g. the US Department of Housing and Urban Development (HUD) prepares area wide or SEA for projected metropolitan development, and US Department of Transportation prepares SEA for radar at airports. The HUD prepared an area wide Environmental Impact Assessment Guidebook to assess the impact of alternative patterns of urban development in metropolitan areas; the steps proposed by this guidebook are listed in Table No. 3.1. as summarized by Therivel (1992).

As is the case in other policy analysis methods, SEA is a likely subject for many difficulties, most of it shared with EIA. Therivel (1992) suggested the following constrains in applying SEA:[50]

* The often nebulous nature of proposals at the level of policies and plans, and the tendency for decisions regarding Policies, Plans, and programs (PPPs) to be made in an incremental and not clearly formulated fashion.

* The problems of system boundaries: the large number of potential decisions that flow from a higher-level decision, the large number of potential developments over a physical area, and the consequent analytical complexity required.

* Lack of information about existing and projected future environmental condition, lack of information about the nature, scale and location of future development proposals; and thus the lack of precision with which these impacts can be predicted.

* The large number and variety of alternatives to be considered at different stages of policy formulation.

* Lack of shared information about the experience of EIA at the strategic level, and a dearth of cases in which it has been applied, especially to policies.

* The uncertainty over public involvement in the policy making process.

* The political nature of the decision making process.

Table No. 3.1

US Department of Housing and Urban Development Methodology for Areawide EIA

1- Determine need/ feasibility:
Indicators of need
Availability of data, expertise, funds
Prepare study design.

2- Establish area boundaries, analysis units, environmental data base:
Availability of data
Location of expected change
Jurisdictional boundaries
Compatibility with anticipated impact issues.

3- Identify areawide alternatives:
Research local and areawide plans, programmes, etc.
Define areawide alternatives: totals, 'theme', etc.
Allocate areawide totals to analysis units: by land use type, resource type, etc.

4- Scoping:
Identify key issues
Eliminate non pertinent issues
Establish work plan: revise/ finalize area boundaries, data collection plan, report format.

5- Environmental analysis:
Document baseline condition (analysis unit scale) : presence or absence, quantity, sensitivity/ significance, past changes if significant.
Establish units or multipliers of demand and/ or consumption (per capita), per household, by industry, etc.
Estimate impacts: for each environmental component and for each alternative being at analysis unit scale, aggregate for area scale.

6- Impact synthesis and evaluation:
Identify evaluation standard/ criteria/ preferences
Evaluate impact for each environmental component
Compare alternatives.

7- Recommendations:
Identify mitigation measures (prevention, compensation, substitution)
Identify preferred alternatives (if possible).

Source: R. Therivel and others, **Strategic Impact Assessment.** 1992. p.47.

Assessment and review of several application of SEA is given in Therivel and Partidario (1996). The development of SEA to fill the gaps left by EIA will prove to be essential in improving the environmental decision making process. Tackling the problem from an early stage can increase the efficiency of environmental impact assessment and reduce the time of preparing EIS for project scale actions. It is also vital for developing countries which have not adopted EIA yet, to incorporate SEA and EIA in their national policy plans to facilitate their environmental decision making process. Sadler (1996) gave a good assessment of the process and current trends of application.

The previously discussed methods of analysis and assessment: CBA; EIA; RA; and SEA, play an important part in the process of environmental decision making since they furnish the base for different policy alternatives. The process of environmental decision making will be discussed in the next section.

3.3 Environmental Policy

Environmental policies are the result of a complicated process of decision making and policy formulation. The conflicting values involved, such as economic, social, ecological, and political, make the task of decision makers very critical and subject to scrutiny and criticism. The difficulty of formalising environmental policies is further complicated by the diverse interest and lobbying involved to influence the process.

3.3.1 Environmental Concern

Fear is the real motive behind environmental concern, fear of death; sickness; and lack of resources. The previous chapter demonstrated that scarcity of resources

and loss of wilderness were the key factors in initiating concern for the environment during the last two centuries. However, in the last three decades, environmental quality became the main issue, and concern was shifted towards the environmental quality of life, as a result of increasing public concern, concerns for the quality of the air people breath, the water they drink, the food they eat, and the hazards which might occur.

In many countries environmental concern is expressed by *concerned* individuals through grassroots organizations and transferred to the political arena through public representatives. In some cases the authoritative power initiates environmental concern either for election rhetoric or genuine concern. These countries are characterized by the continuous conflict between the elitist interest groups and government activities which are based on representative democracy. Public accountability and periodical elections are part of the political structure. On the other hand, in countries which may lack the political freedom to express public concern, environmental concern is left to the conscience of the authoritative power. Considering the increasing international emphasis on environmental issues, the environment can be used in political propaganda, as a means to extract foreign financial aid, or influence the direction of development in developing countries.

Environmental concern can take different forms which are consequently translated into different approaches to environmental policies. Generally, the response can be divided into two main directions. The first is concerned about consequences for health and degradation of environmental quality and its affect on the quality of life, including scarcity of resources. This direction concentrates on issues like pollution, waste disposal, risk management, hazardous substances, and

sustainability. The second direction is concerned with nature conservation, and concentrates on issues such as wildlife reserves, scenic areas, national parks, and biodiversity.

Environmental policies deal with both directions. However in the last few decades the first direction has been given more emphasis due to the rapid degradation of environmental quality and its negative affect on human health and quality of life. This direction finds support from the concerned public because they are easily convinced about the direct benefits to their quality of life-style and health conditions. The second direction finds less support from the mass public due to the indirect affect on their health and quality of life. Mainly morally motivated environmental organizations concerned for nature conservation and wildlife are the main supporters of this direction, in addition to scientific and academic institutions. However these organizations can be very efficient in putting pressure on politicians to push their conservation agenda, which makes up for the wider support they lack. In countries like the US and the UK societies for nature conservation have a long history and still maintain an active position in the political arena. On the other hand grassroots organizations concerned with environmental quality have grown tremendously in the last three decades, and have managed to establish considerable public support.

The public reaction to a specific environmental issue can simply be ignorance, because it might not involve them directly, or it is low on their political agenda. Others might be concerned but are not interested in any action to initiate political pressure or protest against a specific problem. Grassroots organizations

provide the appropriate ground for the public to express their concern and to transform it into publicly organized pressure.

Public organizations and pressure groups form the essence of public participation and are very valuable in incorporating public concern in the political process. They can also help in providing local information and highlighting concerns often ignored by the centralized political process. Pressure groups can take two main types of organizations. The first is *interest organization*, such as community groups and labour unions, which represent the interest of its own members usually within the community scale. Activist in such organizations can be called "Community Actors". The second type is *environmental groups*, which represent the public interest in a national and global scale. Their activists can be called "National Actors". O'Riordan (1981) classified environmental activists into similar categories. He called the first the *Private actor* who is motivated by personal and selfish reasons, and whose participation is "episodic and crisis oriented". This kind of activist is concerned about his economic and health well-being. The other kind of environmental activist O'Riordan called an *Ideological actor* . This activist is motivated by intellectual and moral values. He is concerned about the general issues and attempts to improve the process of decision making and decisions themselves.[51] Ideologically oriented organizations tend to be involved in policy oriented issues rather than crisis and community issues, which are dealt with by interest organizations. However, in the last ten years increased involvement in crisis issues such as the Greenpeace campaign against French nuclear tests in the Pacific and the recent road protests in Britain indicate that there is a shift in the ideological activist (National Actor) mode towards more involvement in crisis issues and local events.(See Fig. 3.4)

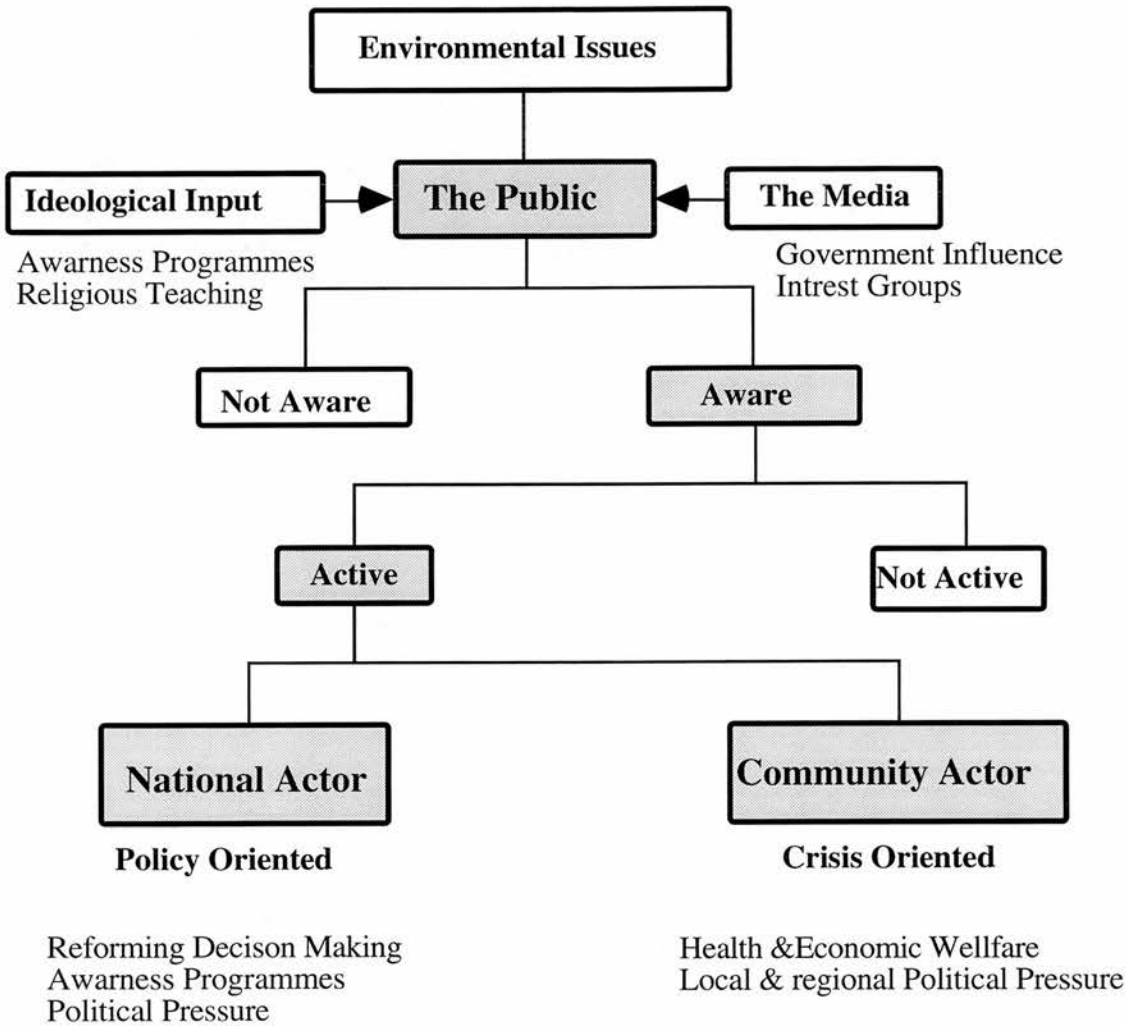

Figure 3. 4 Public Reaction to Environmental Issues

Source: Compiled by the Author

As discussed in the pervious chapter, public support for environmental issues is related to social position: the higher the income the higher the position, and consequently more liberal the opinions about a variety of social problems including environmental quality. O'Riordan (1981) suggested that "it is hardly surprising that the membership of environmental activist groups is largely drawn from middle income earners, whose motives for joining may be as much as a reflection of social face-saving as of any personal interest." [52]

The growing strength of public concern for environmental quality is the driving force behind formalizing environmental policies and drafting legislation. In the European Community the growth of public interest in environmental issues began in the 1960's. However, the focus on issues can differ from one country to another according to media influence and their reflection of issues on daily and future life quality. Briggs (1986) discussed a survey of public opinion on the environment, where residents in Denmark, Ireland, the Netherlands, and UK tend to be less worried about the state of the local environment than those in Belgium, Greece, Germany and Italy. On the other hand, concern about national and global environment was least in Belgium and Ireland, and greatest in the Netherlands, Germany and Italy. The type of problem the public are concerned about also varied. Air pollution, for example was considered relatively unimportant in the UK, but a serious problem in Greece and Italy.[53] Environmental concern is influenced by political culture. In some countries lack or limited access to information shapes the degree of concern and consequently public participation. In some cases public participation in the decision making process is not allowed and grassroots organizations are illegal.

What builds public concern ? The most influential factor is the media, where the increasing coverage of environmental issues in all kinds of media venues have played the decisive role in building support for initiating environmental policies, especially those related to pollution and other health hazard causes. The numerous scientific reports and the readily observed and felt evidence of environmental degradation have supported and exerted this media coverage. This correlation can work in countries where the media is free to a certain extent. On the other hand in unaccountable, government controlled media, public information will depend mainly on the visible and felt evidence of health hazards, and definitely much less concern will be given to issues not directly related to contemporary human health and well-being, such as wildlife and nature conservation.

Public concern and participation is a result of the prevailing political culture, distribution of power, and constitutional rights. These factors determine the degree of public involvement in environmental issues. On the other hand, free access to information is essential. If this condition is not satisfied the mass public simply will not be aware of environmental conditions and any possible hazards. A classical example is represented by the previous communist block countries, such as East Germany and Poland, where the mass public were not aware of the degree of environmental degradation or health hazards, not to mention depletion of resources and destruction of habitat for the prosperity of the proletariat. On the other hand, it is naive to assume that in democratic societies, complete freedom of information is exercised. However, a certain degree of freedom allowed the media, especially in the United States, to supply the public with information which trigged the environmental movement in the late sixties.

Environmental concern in Saudi Arabia is not very well structured due to the political system and lack of public venues to express concern. However, traditional Islamic and tribal ethics inspired a rich heritage of nature conservation and environmental concern. Unfortunately a decline in the maintenance of traditional nature conservation and sustainable development practices can be noticed, especially with rapid socio-economic changes in the last three decades. In the last ten years, especially after the establishment of the National Commission for Wildlife Conservation and Development (NCWCD), media coverage of this prestigious agency's activities have helped in improving public concern for nature and wildlife conservation. In 1995 the Saudi Project for Environmental Awareness was initiated as part of the military contracts off-set programme. Public environmental awareness and participation in Saudi Arabia will be discussed in more detail in chapter six.

3.3.2 Decision Making Theories

Two main views of decision making can be distinguished in the current political cultures, Rationalism and Incrementalism. The first one takes a normative view of the process, and suggests a comprehensive approach where all steps are defined and outlined starting with goals and objectives, and ending with evaluation of alternatives and action plans. It is characterized by a prescriptive approach, explaining how the process should function. The second one suggests a behavioural view of the decision making process, where emphasis is given to real life practices. This approach seeks to implement incremental adjustment to the status quo. Its argument is based on the fact that most situations involve a high degree of uncertainty, and radical change in the system will be resisted by those in bureaucratic bodies.

Herbert Simon's (1947) work "Administrative Behavior" was one of the advocates of the rational approach. Assuming a rational behaviour, rationalism suggested that the process can take sequential steps. Smith (1993) summarized the steps of a rational comprehensive model as follows:[54]

- **Identify the problems:** the problem is defined and isolated from other concerns.
- **Determine goals and objectives:** the values, goals and objectives of the decision makers are identified and may be ranked so that the desired result (or ends) are known.
- **Review alternative strategies:** the ways and means of achieving the ends are determined by identifying the range of possible solutions and their respective benefits and cost.
- **Estimate potential impacts:** the consequences of each alternative strategy are assessed.
- **Select the preferred plan:** the various alternatives are compared and the alternative that maximizes net expectations is selected.
- **Implementation:** the perfect plan is put into operation.
- **Evaluation:** the success of the plan is determined and behaviour modified as appropriate to correct the errors.

Assuming an ideal condition is the main weakness in the theory; sequential functioning cannot be achieved in most cases, since uncertainty dominates most stages especially when it comes to evaluating different alternatives. However, establishing a reference point of perfect sequence allows politicians and public observers to assess the process, especially in terms of satisfying goals and objectives. Smith (1993) argued that "The rational comprehensive model does not have to be realized in practice: its value is that it serves as a commonly recognized departure point in decision making."[55]

In contemporary political cultures, rationality is advocated by economists, since it is aimed at optimizing the end result which in many cases deals with economic values. Westman (1985) noted that "One widely held ideal in modern democracies is that the decision-making process should be an optimizing one. Thus, a desired solution is that which maximizes social welfare, while being as equitable as possible in distributing cost and benefits among the various segments of society."[56] This attempt to optimize solutions with several conflicting objectives can cripple the process. Decision makers, however can give weight and preference to some objectives to seek solutions in which the weighted sum of objectives is maximized. Ascher and Healy (1990) suggested it is important to recognize that when a project or policy is first identified, there is often an exaggerated optimism that good planning and design will mitigate problems with regard to other concerns. They argued that:

> "Another reason for the failure to pursue multiple objectives is the presumption common to conventional public administration and planning theory that objectives and goals ought to be clarified and ranked from the outset as an analytical (as well as political) exercise ... poor policies emerge from muddled, implicit goals; good policies require an explicit hierarchy of goals. while it is true that ambiguity makes policy-making more difficult."[57]

The notion of "disjointed incrementalism" initiated by Lindblom (1959, 1979) and Braybrooke and Lindblom (1963) was described by O'Riordan (1981) as "the most accurate statement of organizational decision making." This notion suggests that [58]:

- Choices are made at the margin of the *status quo* . Any tendency towards systems transformation is quickly blocked by countervailing pressure towards system maintenance.
- Only a limited array of options, none of which moves very far from established procedures, is considered, and only a limited range of consequences evaluated.

- The evaluation process is further distorted by discrepancies between agency objectives and agency performance which change the nature of the outcomes considered.
- The problem itself is transformed in the process to 'fit' agency directives. Problems are seen as stress to be overcome, rather than goals to be achieved.
- Analysis and evaluation occur sequentially, so policy is never what was predetermined but the unanticipated result of repeatedly narrowing choice.
- Policy making is dispersed throughout political institutions, impeding thoughtful comprehensive reviews of integrated ' megaproblems'.

The notion of disjointed incrementalism can be true for most political cultures, especially the concept of viewing environmental problems as stress to be overcome rather than goals to be achieved. Perceiving alternatives as an improvement of the present conditions, rather than ideals to be achieved make this notion acceptable to many administrators who fear radical changes of the status quo. Fernie and Pitkethly (1985) explained that:

> "Incrementalists believe that changes in policy occur through a series of small steps, each of which are minor adjustments to the status quo ... disjoints occur when a series of steps changes into a new direction, perhaps because new personnel bring new perceptions of the most appropriate managerial adjustments to be made to existing activities."[59]

The suggestion that there is no absolute solution, and decision making should concentrate on avoiding the wrong decision, or as Lindblom put it "muddling through" provide no guidance to decision makers as to how and when they might intervene or derive decisions. Although this notion describes the current culture of decision making accurately, it provides no explanation of the radical shift of thinking, like the one which occurred during the late 1960's in the US. Smith (1993) suggested that "The model places a high value on the need for consensus and agreement. It is more important that decision be *acceptable* than *correct*."[60]

Combining both directions is possible since the ideal structure of steps is needed as a base line reference, and the gradual sequential change can be more acceptable within the administrative bodies. Etzioni's concept of "mixed scanning" attempted to combine both notions by suggesting that normal policy matters are dealt with incrementally, but at the same time, and for a few top priority issues, a wider more rational scanning of problems and possible solutions is taking place.[61] Both approaches can provide useful contrast for structuring environmental decision making.

3.3.3 Environmental Decision Making

The difficult task of formulating environmental policy requires evaluating several alternatives and balancing tradeoffs. The process of environmental decision making is complicated by the enormous values which need to be considered in the process, such as ideological, social, ecological, political, and cultural values. Park (1986) suggested that due to the complexcity of environmental problems it is difficult to establish a decision making machinery suitable for selecting between multiple goods. Such complex problems are best handled according to the principle of 'bound rationality'. This approach of decision making suggests that we use pragmatic ways and should be satisfied by acceptable(but generally sub-optimal) solutions.[62]

Part of the complexity of environmental decision making is the interrelation between the various variables involved. O'Riordan (1981) divided the variables in policy making into three groups: [63]

a- The cognitive structure of key actors.
b- The nature of institutional environment.
c- The characteristic of the issue under investigation.

Each group will influence the process according to its role within the political culture. The influence of key actors will vary at each stage of the process. However strong actors can enforce certain ideologies or political preferences opposite to the propositions of other actors. Distribution of power between institutions draws a series of sensitive boundaries, which can cause conflict in all stages of the process, beginning with initiation and ending with implementation and monitoring.

The interaction is further complicated when considering the time, place and issue of concern. Identifying and publicizing environmental issues usually is initiated by pressure groups which might include concerned citizens, grassroots organizations, scientific and academic institutions. In addition to government agencies, environmental concern is subject to the influence of pressure groups and special interest lobbying, each with its own interest and concern. Consequently placing the issue in the political agenda will depend on the result of conflicts between the different groups.

Brooks (1974) explained that "The incapacity of lay politicians to understand the mysteries of science means that they can be duped by those who deliberately mystify them for their own gain."[64] This is one of the major problems in environmental decision making, where expert opinion is not fairly presented during the deliberation stage in order to evaluate different alternatives. O'Riordan (1981) suggested that in many major environmental issues, key information was withheld or abused by special interest groups e.g. the oil lobby and the automobile lobby.[65] The shape and influence of special interest groups will differ from one political

system to another. In many western countries special interest groups are very organized and well financed e.g., in the US all industrial corporations maintain strong connections in Washington DC to guarantee their interests. In other countries where the political procedure is not very well defined, special interest groups will take different forms which might include social and tribal influence or connection to the military organization.

One of the main dilemmas in decision making is that a decision could be based on personal interpretation of a single piece of evidence. O'Riordan (1981) argued that "decision making is rarely a conscious rational exercise where key actors can readily be identified and asked to explain how and why they evaluated information and make judgment."[66] O'Riordan agreed that in spite of empirical difficulties, it is possible to sketch various decisional pathways common to environmental problems. He suggested that there are four possible decision paths. (See Fig. 3.5)

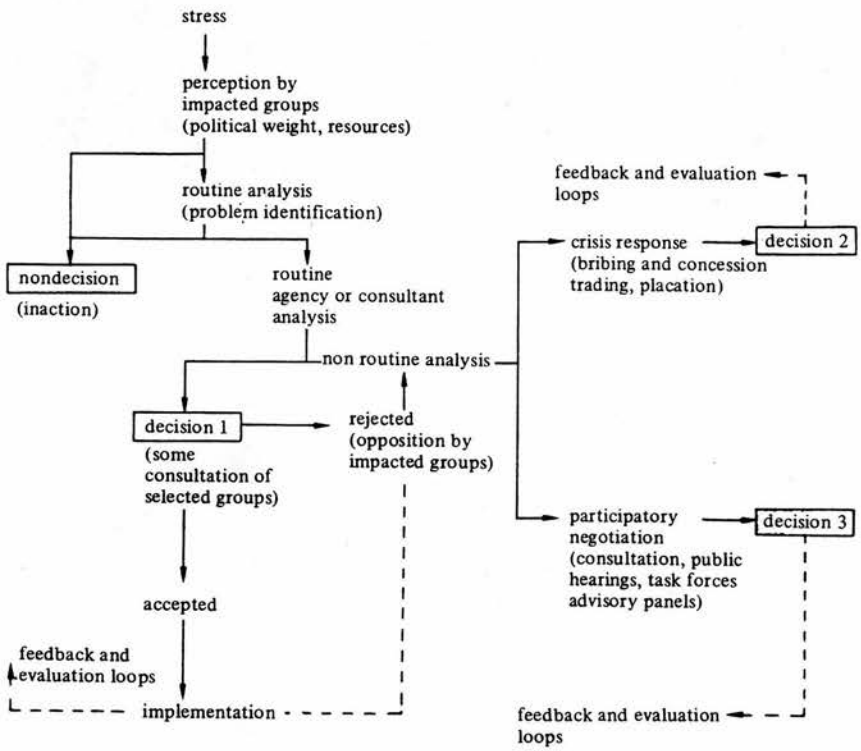

Figure 3.5 **Decisional Pathways in Environmental Policy Making**

Source: T. O'Riordan, **Environmentalism.** 1981. p. 246.

In each stage of environmental decision making key actors play an important role in formalizing decision and drafting policies and action plans. Assuming a decision was taken to formalize environmental policy for specific environmental issues, decision making can take five steps. Ideally each stage will be influenced by specific key players and actors. These stages are:

1- Data inventory and research studies.
2- Check list of alternative policies.
3- Comparison and evaluation of alternatives.
4- Policy formulation.
5- Action plan.

The availability of ecological data and research results can be decisive in the continuation of the process. Usually government agencies, scientific institutions, or public organizations will fund and support such efforts to compile sufficient data needed to establish policy alternatives. One of the difficult tasks when drafting policy alternatives is the integration of social and religious values in addition to dominant political orientation and public pressure. Sorting scientific data and matching it with these values will require sufficient staff which should include politicians, scientists, planners and administrators. The end product of this stage will be a check list of alternative policies. The third stage involves assessment and evaluation of alternative policies. Three main steps must be taken:

a- Analysis of assumption on which a specific policy was based.

b- Definition of priorities in terms of the long term goals and compatibility with national environmental policy. At this stage politicians can place pressure on professional staff and scientific consultants to push

forward the political agenda. Therefore it is recommended to limit the evaluation process to planners and scientific consultants.

c- Impact evaluation. Several techniques can be used according to the type of the problem to evaluate each policy alternative, e.g. Environmental Impact Assessment (EIA), Cost Benefit Analysis (CBA), Risk Assessment (RA), Strategic Environmental Assessment (SEA). When considering policy at national or regional level, SEA can be useful to predict cumulative and area wide impact.

During the fourth stage a policy should be formalized based on the evaluation of each alternative. This stage will include establishing guidelines and principles against which possible courses of action can be based and evaluated. The final stage is to transfer these guide lines and principles into action plans. Politicians and legislators will be the dominant players at this stage, which can produce two types of instrument; negative, including laws, regulations, taxes; or positive which include educational programmes, public awareness and moral persuasion.(See Fig. 3.6 for Environmental Decision Making Process Flow Diagram.)

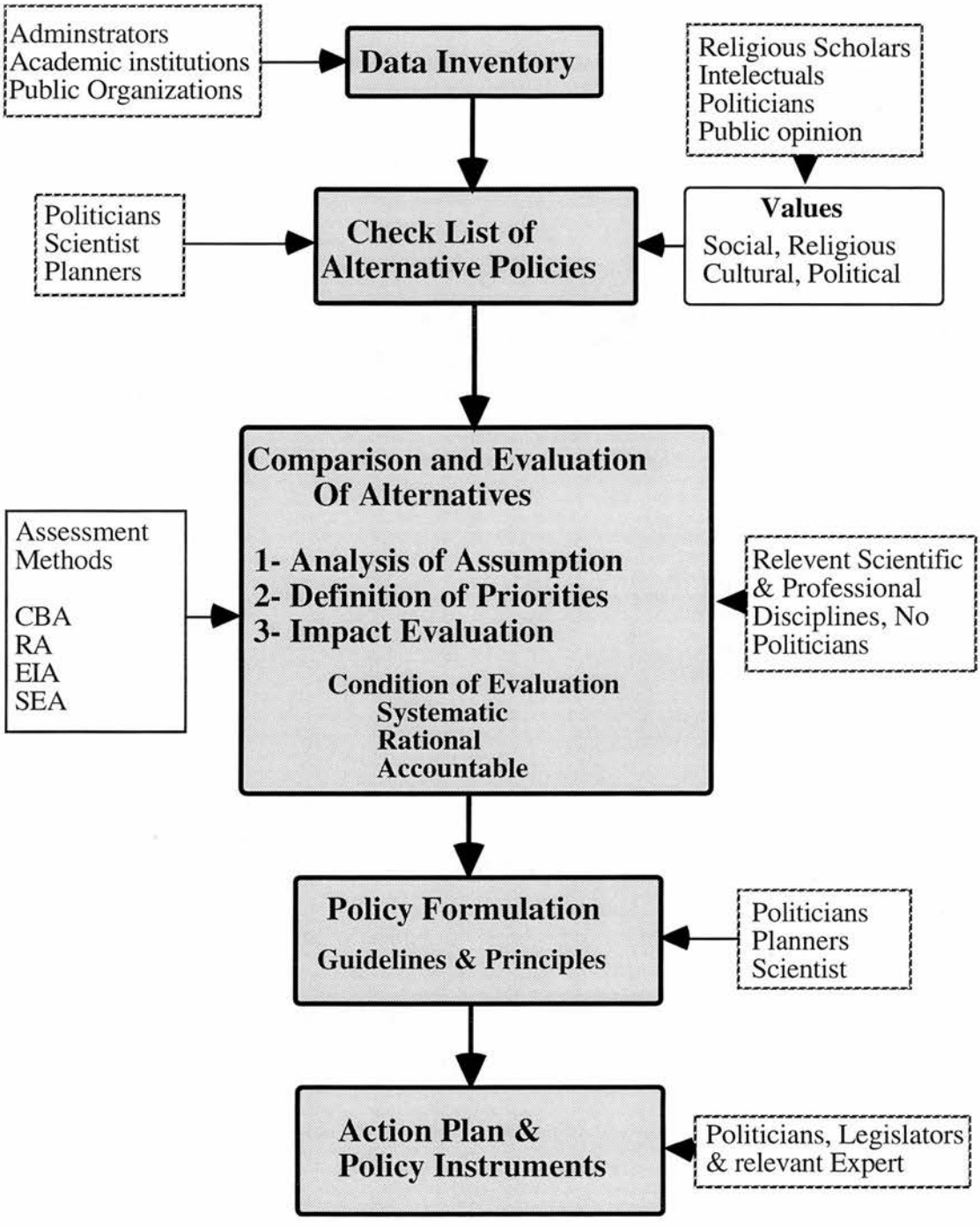

Figure 3.6 Environmental Decision Making Process

Source: Compiled by the author, based partially on discussion by C. Park, **Environmental Policies.** 1986. and T. O'Riordan, **Environmentalism.** 1981.

It should be noted that the type of political and decision making culture will shape the whole process of environmental decision making. Tradition, political system, and religious teaching can be decisive in shaping the final form of policy making pathway. O'Riordan (1981) described the policy making culture as "a national concept for it relates to the legacies of national administrative procedures and institutional arrangements and to what people operating in nation states regard as customary behaviour."[67] The United States political culture, for example, is different from that of France and the UK, although all of them adopt the concept of elected representation within the western democratic theory. On the other hand countries like Saudi Arabia and Oman have completely different political and policy making cultures to those that exists in western countries. The United States government consists of three main parts, separate but equal, where no single centre of power can predominate over any other; the congress; the administration; and the judiciary branch. Therefore it can be considered as a polycentric government, where power is distributed over several bodies. Congressional special committees are very powerful in terms of initiating and formalizing environmental policies.[68] (See Fig. 3.7). In the UK we can recognize different distributions of power where the prime minister is at the top supported by his cabinet which makes the British system remarkably monocentric. Parliament is by no means "government" in Britain: it is a theatre in which the mood of the nation is translated into political rhetoric.[69] In Saudi Arabia the political culture is quite distinctive where there is no organized grassroots organizations to initiate pressure for environmental policies. The King is the point of reference for all authorities including executive, regulatory, and judicial. The political culture, structure and decision making process in Saudi Arabia will be discussed in more detail in chapter four.

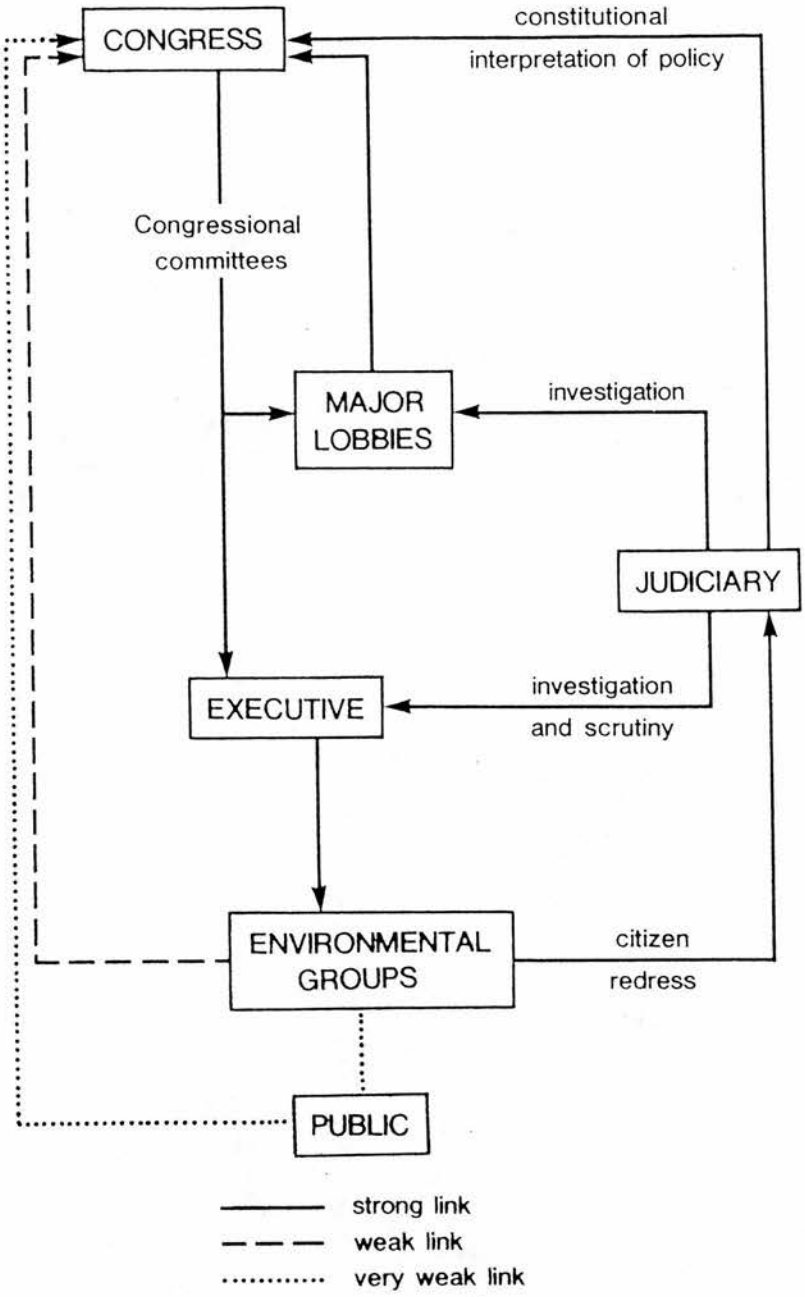

Figure 3.7 Constitutional Relationship Within The US Government

Source: T. O'Riordan, "Institutions Affecting Environmental Policy" in R. Flowerdew (ed.) **Institutions and Geographical Patterns.** 1982. p. 109.

3.3.4 Environmental Policy Formulation

Formalizing environmental policies requires the definition of priorities, which will influence the comparison mechanism used to evaluate alternatives. The dilemma with environmental issues is that most cases are not clear cut, and decisions are often based on pragmatic and absolute rationality. Park (1986) suggested that "Policy formulation is normative in the sense that it is concerned with recommendations and rules based on standards and values of society"[70]

Policy formulation can span a hierarchy of policy levels, from national policy for biodiversity or risk contingency plans in the case of environmental disaster, to regional development programmes and their impact on human environmental and natural resources. Environmental policy formulation will also involve project scale decisions which emphasise environmental impact and compatibility with national policies. O'Riordan (1982) noticed that the term "policy" is an elusive one, where "It may refer to a set of guidelines or principles against which a possible course of action can be evaluated, or it may relate to a declared statement of intent to do something, backed up by the provision of an enabling budget."[71]

Challenging the process of environmental decision making by incorporating new techniques of assessment and evaluation can be one way of reforming environmental policy formulation. An example is the US NEPA, where EIS were required for development projects, which forced the federal government to review its procedures and to coordinate their plans to accommodate the new requirements. The current trend to include SEA as a requirement of national policy plans is another example of process reform based on improved techniques and methods. However,

institutional reform is also needed to accommodate such new approaches and methods. Consolidating existing agencies is one of the ways political scientists experimented with to improve the efficiency of decision and policy formulation process. Policy formulation should reflect the values and ideology of those involved in the process of decision making, and in a broader sense the authoritative power and society as a whole.

The decision regarding which governmental agency is to be included in the process of environmental decision making and policy formulation can be very critical. Considering the fact that some agencies have more power and prestige than others can exclude some agencies from being involved in policy making. Ascher and Healy (1990) argued that the "dilemma of whether to include or exclude bureaucratic units in formulating and implementing natural resource policies is based on the inevitable trade-offs between complicating the decision process and ensuring the representation of all relevant factors."[72] The other dimension of the problem is the possible poor coordination among divisions of the authority and jurisdiction. Rival agencies and provinces or states can block the achievement of policy action plans and more possibly the implementation of a policy instrument. Ascher and Healy (1990) noted that substantial governmental authorities are charged with pursuing the interest of their particular jurisdiction rather than those of the country as a whole. This is evident in their reluctance to exchange the welfare of their own people even for the greater good of the nation. [73] In the case of Saudi Arabia this kind of conflict does exist, where agency struggles and rivalry can block the implementation of environmental policies. This point will be discussed in more detail in chapters five and six.

Can the solution be the consolidation of relevant agencies in one administrative body ? The experience of the US and other countries proved that this approach can be successful to a certain extend, where regulatory bodies were found to be necessary to oversee the main body. Concentration of power into one agency has its draw backs. Ascher and Healy (1990) argued that "One potential weakness of the single authority strategy is that such an agency may become impervious to other voices ... the single agency can develop its own internal coordination difficulties if it takes on too broad a mandate for its administrative capacity" [74]

On the other hand concentration of authority in a single agency can reduce; the time needed for policy formulation, conflict of authority and jurisdiction in the implementation stage. However, enforcing regulations and monitoring policy implementation by two separate agencies can improve implementation efficiency. The absolute authority of policy making, implementation, and monitoring cannot be left to the same agency. The administrative hierarchy needs a supervisory authority to avoid abuse of power for the benefit of bureaucratic staff and politicians, and to ensure that implementation serves the interest of the nation as a whole.

3.4.4 Policy Instruments and Implementation

As discussed earlier, the last stage of the decision making process should formalize action plans, which need both the mechanism and instruments of implementation. These instruments should reflect the social and political values within the society.

The instruments used in environmental policies can be divided into two different approaches, either positive or negative. The first seeks to tackle the

ideological and awareness side of the problem, by emphasizing moral persuasion to increase the belief in environmental ethics and respect of nature. It also concentrates on environmental awareness programmes to improve public knowledge regarding environmental quality and current stress leading to environmental degradation. The role of the media in this approach is vital in addition to academic institutions which can help in passing the message to young children from an early stage in their life. The second approach uses legal regulations to satisfy the goals of specific environmental policy. This approach utilizes different policy mechanisms such as laws, licenses, registration and penalties to control human actions and mitigate development projects. It also uses economic instruments such as emission taxes and subsidies to discourage and reduce negative impact. The success of any type of policy instrument lies in the monitoring mechanism used to monitor and evaluate implementation and the degree of success in achieving policy goals. Continuous evaluation of policies and its instruments is vital in formalizing new environmental policies.

Implementing environmental policies require the involvement of public administrators or civil servants to enforce regulations according to the specified laws. However, as Ascher and Healy (1990) suggested, the considerable discretion inevitably left in the hands of administrators require that they adjust the outcomes through their decisions, thus creating policy in the most concrete sense.[75] The role of agencies, administrators, and local authorities in policy implementation can differ according to the national context. In the US public officials play an important part since they are accountable to politicians and to the court. In other countries, public officials have the ability to control the flexibility according to which they implement environmental policies, mainly to suit political commitment. Ascher and Healy

(1990) argued that "Although state enterprises are typically created out of the belief that they are in a better position to address externalities, environment, and participation ... they are some times required by the highest political leadership to make short-sighted pay offs to the politically powerful."[76] In some cases the political circumstances might play a role in the extent to which environmental policies are implemented. O'Riordan (1982) argues that "government agencies can create a good case and capitalise on the mood of the time."[77] This is shown to be true in most political cultures, where the public mood and political circumstances can facilitate implementing environmental regulations. On the other hand, the state of the economy, especially unemployment figures, can discourage implementing environmental policies. This was evident in the US, during the Reagan administration, where the decline of public support of regulation controlling resource development and industry, allowed the administration to encourage greater exploitation of natural resources, which had not been permitted in the pervious administration.

The position of the authoritative power is the key factor in formalizing and implementing environmental policies. O'Riordan (1982) agrees that "The ideology of officials with respect to environmental protection and development is an important element in understanding a national environmental strategy."[78] The lack of government and public support of environmental laws can weaken the implementation process. The failure of the Environmental Education Act in the US due to the lack of federal and public commitment to support it, is another example of the influence of public and political mood in implementing environmental policies. On the other hand the Clean Air Act and the Endangered Species Act found strong support from federal agencies and advocacy organizations, which led to its

enforcement. The nature of human activities tend to resist regulation. Marcus (1986) suggested that "Inconsistent and sometimes unrealistic operation of the environmental regulatory system also contributed to public disenchantment."[79] The lack of man power and appropriate budget can constrain the implementation process even if the administration is willing to enforce its policies.

As is the case in decision making and policy formulation, conflict and rivalry between agencies can cripple implementing and enforcing regulation. Implementation of policies involve additional players to those involved in policy making, thus bureaucratic conflict by the implementors of a programme are often more complicated than conflict of interest in the previous stages. O'Riordan (1982) observed that in practical terms environmental policy is often a frustrating exercise. The interaction of politics, economics, administration, and law make it all but impossible to disentangle all the relevant factors bearing upon a decision or leading to a particular policy.[80]

3.3.5.1 State of Environment Report.

One of the follow-up mechanism used in environmental policies is the periodic publishing of environmental data indicating environmental conditions and implementation of policies and programmes. The concept was developed in the USA through the NEPA of 1969. Title II-Sec. 201 of NEPA required the President to transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report which shall set forth the following:[81]

- The status and condition of the major natural, managed, or altered environmental classes of the Nation, including, but not limited to, including in particular the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including but not limited to, the forest, dry land, wetlands, range, urban, suburban and rural environment;

- Current and foreseeable trends in the quality, management and utilization of such environments and the effect of those trends on the social, economic, and other requirements of the nation;
- The adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of the expected population pressures;
- A review of the programmes and activities (including regulatory activities) of the Federal Government, the State and local governments, and non governmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilisation of natural resources;
- A programme for remedying the deficiencies of existing programs and activities, together with recommendation for legislation.

Several countries adopted the concept, and SoE became a widely acceptable method of evaluating environmental quality and the progress of implementing environmental policies. The report itself might take different forms according to the political and administrative circumstances. However, it represent a complex process of collecting and classifying scientific and social data. Briggs (1993) noted that "State of environment reporting is not a wholly neutral process. It is influenced by the institutional, cultural and scientific environment within which it takes place."[82] Most reports follow similar systematic structure, where the environment is seen as a system which closely interacts with economic, policy and social systems.[83] An OECD publication (1991) gave a conceptual framework for the state of environment report based on the concept of interaction between these systems. (See Fig. 3.8)

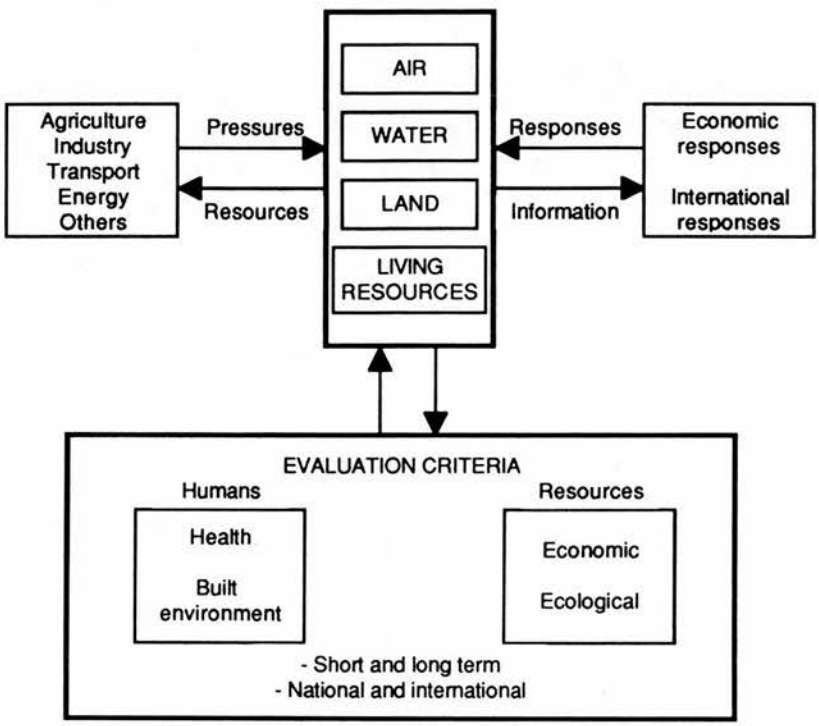

Figure 3.8 Conceptual Framework for The OECD State of Environment Report.

Source: D. Briggs "State of Environment Reporting" in B. Nath & others (ed.), **Environmental Management - Volume 3 Instrument For Implementation.** 1993. p. 132.

The experience of preparing SoE is relatively recent and responsible institutions are experimenting with different approaches to preparing such documents. The main problem is establishing indicators of environmental qualities and auditing procedures to assess compliance with regulations and implantation of policies. This should be a major aim for relevant institutions since such reports can be helpful in improving policy making and formulation. On the other hand such document can be the only access to environmental data available to the public in some countries.

3.4 Environmental Law

Laws pertaining to environmental issues have existed for a long time. Many regulations existed in the Islamic *Shari'ah* to improve and protect the environment as early as the sixth century, in addition to a great number of judicial rulings during the last fourteen centuries. Such rulings dealt with waste management, water conservation and management, human health, soil erosion, wildlife and nature reserves. In many parts of the world laws were applied to manage the environment. In England for example, the first law was enforced in 1534. This law was initiated under King Henry VIII, to avoid the destruction of wild fowl habitats, which was needed to sustain the sport of falconry practised by the nobility.[84]

In modern times environmental law is bound and controlled by its constitutional role, which determines its political implication. In general terms the judicial judgment is similar in most western countries, however distribution of power is the decisive factor in the role of courts. The America constitution distributed the power between the legislator (the congress), the executive (the president), and the

judiciary bodies. This allowed the courts to be more active in enforcing environmental laws, scrutinizing the operation of the other two branches, and defending civil rights. The distribution of power in the British constitution reduced the power of the judicial body to enforce environmental laws. Lyon (1973) stated that "the courts take no initiative in important public issues such as those relating to the environment, and are wary of intruding in areas of responsibility that they regard as belonging properly to the legislative or executive branch" [85]

It is difficult to constitute a definition and scope for environmental law at international level, where the rule of the judicial bodies can differ significantly according to the prevailing political culture. However, environmental law in general terms can be defined as any regulations which control actions affecting the natural and man-made environment, to prevent, reduce, or mitigate negative affect in order to enhance environmental quality for the benefit of all living creatures. Accordingly, the scope of issues is very broad, stretching from air, water, and noise pollution to side effects of genetically altered agricultural products. The emergence of new biological and genetic engineering place significant pressure on legislators to accommodate them in the current laws.

Environmental law can be considered a political device, which transfers the power of monitoring to the judicial institutions. However, it is a strong device to enforce accountability of government agencies and decision makers. It also should be noticed that the shift of power within the political culture can alter this position. Environmental law can play a significant role in improving environmental quality and health. Murdie (1993) suggested that current laws exist to:[86]

- Set standards for emission and releases of substances into the environment .
- provide rights of access to environmental information held by public bodies.
- Give rights to citizens to participate in the decision making process concerning pollution and the environment.
- Give rights to challenge and review decisions by public bodies.
- Fix criminal sanctions and penalties for those who damage or pollute the environment.
- provide private rights to individuals to tackle on an individual basis environmental pollution which harms his/her personal welfare.

These function in addition to the advantage of establishing reference point to refer to in the case of dispute gave environmental law special attention in the last three decades, where many countries developed their laws to accommodate the increasing public concern for environmental quality. The United States led most countries in this direction, with the constitutional rights of the judicial branch to scrutinize both the administration and the congress as the base for this leadership. This constitutional position does not exist in many countries, which has led to a reduction of courts power in environmental issues.

Although laws can significantly influence human actions (mainly due to fear of punishment and penalties), the legal process has its own drawbacks, where the process cannot be sufficient if constitutional rights do not exist. Another is the increasing cost of the legal process, as is the case in Britain, where the losing party is often obliged to pay all costs. This can prevent environmental groups from asserting their rights. On the other hand the American system, dictates that each party pays his own expenses. This obstacle can be over come by providing free

public legal advice or funding the process through legal fund aid, which exists in some countries, but does not cover all kinds of cases.

3.5 Environmental policies - Case Studies

This section will review briefly the environmental policies in the US; the UK; Denmark; the Netherlands; and the Sultanate of Oman. (This section was written in 1994, since then several changes in the environmental administrative structure and policies have taken place, e.g., in the UK the establishment of the Environmental Agency that combined several environmental bodies)

3.5.1 The United States of America

At the end of the last century the American congress legislated to preserve large areas of land as national parks. This action, with further nature conservation Acts in the beginning of this century, helped in preserving parts of the national heritage of wildlife and plant species. The concern for human health and quality of the environment as a result of increasing industrial activities, forced the congress in 1969 to draft the National Environmental Policy Act (NEPA). This act was an attempt by members of Congress to change the process by which the Federal agencies functioned in relation to environmental issues. The rational of drafting NEPA was explained by its author, Senator Henry M. Jackson of Washington:

> The responsibility and function of government institutions as presently organized are extremely fractionated. We have, for example, separate agencies and separate policies on shipping, fisheries, mines, forest, and water resource development. At some point in our history we felt it was wise to organize Government around these concepts. This organization reflects our early national goals of resources exploitation, economic development, and conquest.
>
> Our national goals have, however, changed a great deal in recent years. Today government does not reflect this change in objectives and the new demands which are being placed on the environment ... New approaches

are required if we are to be successful in the management of our future environment. [87]

Andrews (1976) explained that the new approach of tackling environmental issues and management included three elements: first, a general statement of congressional policy declaring federal responsibility to create and maintain productive harmony between man and nature. Second, the establishment of new procedural requirements, including one which required Federal agencies to consider, and make public, the impact of their actions on the human environment; and thirdly, the creation of the Council on Environmental Quality (CEQ) in the Executive Office of the President. [88]

NEPA was signed by President Nixon in 1970. The Environmental Protection Agency (EPA) was established in the same year by an executive order as the primary Federal administration agency responsible for the protection of the environment. This agency consolidated most of the government environmental regulatory activities into a single agency. EPA implemented laws at the federal level through regulations, guidance and interpretive rulings. It applied and enforced its regulations through a highly centralized system of ten regional offices. EPA's primary responsibility included establishing and enforcing environmental standards, monitoring and analyzing the environment, conducting environmental research, and assisting State and local government in pollution control programmes.

NEPA was also responsible for establishing The Council on Environmental Quality (CEQ) as part of the Executive Office of the President. This council is responsible for advising the President on national policies for improving environmental quality, analyzing conditions and trends in environmental quality, and

evaluating the effect of Federal programmes and authorities on the environment. CEQ is also required, under NEPA, to supervise the preparation of EIS by the Federal agencies.

The authority of EPA is wide enough to include all pollution and waste management Acts. Its responsibility include regulating the following issues: [89]

- Air pollution under the Clean Air Act;
- Water pollution and sewage treatments under the Clean Water Act;
- Drinking water under the Safe Drinking Water Act;
- Solid and hazardous waste under the Resource Conservation and Recovery Act;
- Hazardous waste sites and community response to chemical releases under the comprehensive Environmental Response, Compensation, and Liability Act;
- Toxic substances under Toxic Substances Control Act;
- Pesticides under Federal Insecticide, Fungicide, and Rodenticide Act; and ocean dumping under the Marine Protection, Research and Sanctuaries Act.

It should be noted that EPA does not deal with all environmental issues. Several US agencies are involved in regulating, enforcing, and monitoring environmental Acts e.g. Department of the Interior (national parks, federal lands, endangered species, and outer continental shelf) the Department of Agriculture (soil conservation); the National Oceanic and Atmospheric Administration (coastal zone management, air pollution, and marine mammals), the Army Corps of Engineers (navigable waters and ocean dumping); the Federal Aviation Administration (air craft noise); and the Nuclear Regulatory Commission which share the responsibility of radiation control with EPA. The aim of EPA to consolidate government agencies is not completely satisfactory. Conflicts and overlap of authority with other Federal

and State agencies still exist and require further reform of the system to improve its efficiency and credibility.

The political structure in the US plays an important part in enforcing and monitoring Federal Acts. Cooperation of States and local authorities can be vital in enforcing and monitoring environmental laws. Portney (1990) gave the following examples: under the Clean Air and Water Acts, the Federal government, (as embodied in the EPA) sets important ambient environmental and source discharge standards, yet the monitoring and enforcing of these standards is left largely to the States and localities.[90]

Environmental laws in the US embody several approaches. Portney (1990) suggested that a number of the most important environmental laws reflect the zero-risk (or thresholds) philosophy. He gave the example of the Clean Air Act which directs that ambient standards for common air pollutants be set at levels that provide an *adequate margin of safety* against adverse health effect, while standards for hazardous air pollutants are to provide an *ample margin of safety*. In the case of the Clean Water Act, ambient water quality standards which were left to the State rather than the Federal government to establish are also to include a margin of safety for the protection of aquatic life.[91]

The large number and complexity of environmental regulatory laws in the US was criticized by many because it promised a great deal in a very short time. Federal statutes have dealt with environmental impact assessment, air pollution, water pollution, and solid and hazardous waste. Federal and state statutes also cover the manufacturing, distribution, and use of new and existing toxic chemicals and

pesticides, chemicals and hazardous substances in consumer products, and toxic chemicals in food. The problem with environmental statutes is the emphasis on absolutist goals. This can be recognized not only in the US but in most countries who attempt to draft environmental legislative Acts.

In the American political and judicial system courts have a vital role in reviewing and monitoring implementation of environmental laws. Citizen and environmental groups can play a part in the court review process. In the US there is much civil litigation over personal injury and property damage due to toxic torts, than most countries. The American environmental agencies at the federal level are frequently given little discretion to eschew enforcement if violation is found, and citizens are empowered by federal statute in many cases to use the federal courts to force the agencies to implement the law and to enforce environmental laws against private companies when agencies do not.

The political system allows state environmental regulatory programmes to address air pollution, water pollution, waste disposal, resource management, and other environmental issues which are virtually covered by federal laws. In some cases state regulation might impose more stringent requirements than its federal counterparts. e.g. the State of California has more comprehensive EIA requirements through the California Environmental Quality Act (CEQA, 1986).

3.8.2 The United Kingdom

Britain suffered from enormous environmental problems during the industrial revolution which lead to several environmental legislation in the late nineteenth century, starting with the Alkali Act 1863. In the first half of the twentieth century

Acts such as the National Parks and Access to the Countryside 1949; Protection of Birds Act 1954; and the Clean Air Act 1956 tackled contemporary environmental problems and the need for environmental protection. At the same period the Nature Conservancy Council was established in 1949.

As discussed previously the central government (Her Majesty's Government) dominates the decision making process in the UK. This is a result of the British constitution which gives power to the Prime Minister and his/her cabinet, who also represent the majority in parliament. The central government plans and implements environmental policies in the country.

The creation of the Department of the Environment and the Royal Commission on Environmental Pollution in 1970 marked a new era in British government attitude towards environmental problems. Although the two dominant political parties currently have different ideological arguments towards environmental issues, Young (1993) suggested that "The lack of difference between the Labour and Conservative parties during the post-war era was symbolised by the creation of the Department of the Environment in 1970. This was the product of civil service advice prepared for whoever won the 1970 election."[92] The Conservative government in the 1980's legislated the Wildlife and Countryside Act (1981) and created Her Majesty's Inspectorate of Pollution (1987). In 1988 the Conservative Prime Minister, M. Thatcher took a stand on environmental issues. In her speech to the Royal Society, she talked about the need to protect the balance of nature and accepted the idea of sustainable development. This attitude can be traced to the increasing importance of environmental issues in the political agenda and public concern, in addition to pressure group lobbying and media interest. Young

(1993) explained that "Journalists went beyond reporting campaigns to investigate issues like dumping of waste at sea, and the sinking of the Greenpeace boat *Rainbow Warrior* by the French in New Zealand"[93]

Until 1988 the administrative structure in UK consisted of: The Department of the Environment, mainly a department of local government, responsible for housing and inner city issues, in addition to national parks, recreation and wildlife; The Department of Transport (DTp); The Department of Agriculture, Fisheries and Food covering countryside issues, farming and fisheries; The Department of Trade and Industry (DTI); in addition to Her Majesty's Inspectorate of Pollution, the Nature Conservancy Council (NCC), and Countryside Commission (CC).[94] The dismembering of the NCC which was announced in 1989 resulted in new environmental machinery. The National River Authority (NRA) was established in 1989 to cover drainage, flood prevention, fisheries, and recreation. In Scotland the authority of the NCC took a more regional form where the Scottish Natural Heritage (SNH) was formed from the Scottish parts of the NCC and CC. In addition to a Countryside Council for Wales, and English Nature formed in 1991, a wider authority was established to cover UK issues named the Joint Nature Conservation Committee. This new structure began to operate in 1991. However, after the 1992 election the Department of Energy was abolished and the Ministry of National Heritage was established. Its responsibility included conservation of historic sites and building, ancient monuments and sport.

The major changes in the environmental machinery can be attributed as discussed earlier to pressure groups and media interest. However, Young (1993) suggested that "The NCC had frustrated ministers during the 1980s as it became

confident in working with environmental groups in opposing development schemes. Its approach to the management of Sites of Special Scientific Interest had also alienated the landowning lobby"[95]

Environmental legislation in the UK takes the form of primary (Acts of Parliament) and secondary legislation (Regulations). The Acts provide the framework provisions, and the regulations provide details and procedures. Centeral and regional authorities are responsible for implementing and monitoring these acts and regulations. Local authorities also contribute to some extent to the process.

The White Paper on Environment *This Common Inheritance* was adopted in 1990 as the main policy on environmental issues. This lead to the main legislative Act in the last few years "the Environmental Protection Act" (EPA, 1990). This Act refined and extended previous policy initiatives, adding to the local authorities responsibilities. EPA gave special attention to pollution control based on the concept of integrated pollution control (IPC). It also emphasised organisation of procedures relating to waste disposal, which lead to the establishment of the Waste Regulation Authorities (WRAs).

In order to clarify its environmental policy, the government publishes an annual report on policy programmes, e.g. the Autumn edition 1992 included a commitment to the use of economic instruments where possible. The relation to industry and the private sector is dealt with by the Department of Trade and Industry (DTI). This department initiated the Environment Help line and the Enterprise Initiative to help business to meet environmental challenges. The relation with industry was also considered by central government which established in

conjunction with DTI the Advisory Committee on Business and the Environment (ACBE). Currently a new central body is under consideration, The Environmental Agency (EA). This body should consolidate the three main agencies, the Department of the Environment, the National River Authority and Her Majesty's Inspector of Pollution.

Compliance with EC directives on the environment in the UK is not without difficulties. The report on national implementation (1993) pointed out several omissions in the notification measures of a number of directives, e.g. 91/410/EEC on the packing and labeling of dangerous substances.

3.8.3 Denmark

The administrative structure in relation to environmental issues in Denmark is distinguished by the existence of the Ministry of the Environment which was founded in 1971. The Government and the Danish Parliament, the *Folketing* are responsible for laying down the overall environmental policies. The Ministry of the Environment consists of the following departments:

* *National Environmental Research Institute*, which provides information on the development of the environment.

* *National Forest and Nature Agency*, responsible for extraction of raw materials, nature protection, public access to nature, and protection of ancient monuments.

* *Geological Survey of Denmark*, a research institute which deals with ground water conditions.

* *The National Agency for Environmental Protection*, responsible for preventing pollution of soil, air and water.

* *The National Agency for Physical Planning*, responsible for physical planning, environmental effects of traffic, preservation of buildings, and methods of assessment of impact on the environment.

The EC Environment Guide (1994) suggested that there is a long tradition in Denmark of ensuring citizens, organizations, and the business sector are involved both formally and informally in the formulation and implementation of environmental policies. Environmental organizations and nature conservation organizations are actively involved in the legislation process of environmental issues, e.g. the Danish Society for Nature Preservation, the Environment Organization NOAH, and Greenpeace.[96]

To give an example of Danish environmental initiatives, the European Commission approved in February 1993 a new Danish eco-tax on waste which will encourage the use of recycled material. The eco-tax system comprises a tax relief to companies that use at least 50 percent recycled materials in their production. The Commission explained its approval by saying that the Danish initiative was in line with the EC's environmental policy which encouraged reuse of materials in the production process. The Danish government stated in 1993 that an environmental impact assessment will be a precondition for the realization of all projects and policies presented by the government.

The EC Environment Guide (1994) noted that the instruments in the Danish government environmental policies are gradually being shifted from pollution control, prohibition and directions to preventive programmes. An important aspect is a continuous effort to educate in environmental affairs as a way of increasing each citizen's awareness. The principle of education arises from the notion that environmental policy will only succeed if it is the responsibility of everyone. Part of the policy on education is the annual publication of the booklet issued by the

Ministry of Education: "Environmental Indicators: What is the State of the Environment ?" [97]

3.8.4 The Netherlands

The Netherlands have a highly developed environmental policy. This resulted from the impact of intensive use of chemicals in agricultural activities and industrial production, which caused a high level of pollution and waste.

Environmental policies and legislation are carried out by the Parliament, based on Article 21 of the Dutch Constitution which states that the government has the responsibility for maintaining a good environmental quality. The legislation out come takes the form of framework legislation; e.g. the National Environmental Policy Plan (NEPP, NEPP-PLUS, and NEPP2). The Ministry of Housing, Physical Planning and Environment (VROM) is responsible for most of the environmental issues, such as waste management, noise, air pollution, and contaminated soil. Other Ministries are involved in environmental issues; e.g. The Ministry of Agriculture and Fisheries, and the Ministry of Transportation and Public Work, which are responsible for waste water, sewage and water pollution. Although the country is centrally organized, local authorities and municipalities are involved in monitoring and implementing environmental laws. The Dutch government tries to enforce cooperation at different levels of administration. A good example is the emphasis it gave to Strategic Impact Assessment as a means of incorporating assessment methods at policy making level. Waste management policies is another example where two bodies are involved, the Waste Management Council (AOO) and the Regional Waste Management Council (RAOO).

The "EC Environment Guide 1994" suggested that there are three principles in the Dutch national environmental policy: cycle management, energy diversification and promotion of quality. The Dutch national policy plans stimulate the development of an integrated approach and are based on eight key issues: climatic change and depletion of the ozone layer, acidification, eutrophication, diffusion, waste disposal, disturbance, dehydration and squandering.[98] The Dutch policy concentrates on the source of pollution and the use of "effect oriented" measures when its not possible to solve the source problem.

3.5.5 Sultanate of Oman

The modern Sultanate of Oman was established in 1972 by Sultan Qaboos bin Said. The political system is based on the traditional monarchy. The Sultan maintains a wide authority in the political system, including the position of the prime minister, while cabinet members represent the executive branch. All major legislative Acts take the form of Royal Decrees, while minor Acts takes the form of ministerial decisions. This strong centralization of power is typical in all monarchical regimes in the Arabian Peninsula.

The state of Oman gave special attention to environmental problems and natural resource management. The first environmental legislative Act, was issued in 1974. This Royal Decree (34/74) which dealt with the control of sea pollution, was followed by a string of Royal Decrees covering several areas such as oil and minerals (42/74), development of water resources (49/77), and National Gardens and Protected Natural Areas (26/79). In 1979 Oman took the first step to establish a specialized agency responsible for environmental issues. The Royal Decree (68/79) authorized the establishment of the Council for Conservation of Environment and

Prevention of Pollution (CEPP). These Decrees were continuously reviewed and elaborated by new laws, e.g. the law on Sea Fishing and the Protection of Marine Biological Wealth (53/81), and the Royal Decree (35/81) on the Protection of the National Heritage.

The most elaborate environmental legislative Act was issued in 1982 "the Conservation of Environment and Prevention of Pollution Law" (CEPPL, 10/82), this law established the base for environmental policies in Oman, (CEPPL, 10/82) was later amended in 1985 with the Royal decree (63/85) to cover many aspect of environmental protection, pollution control and waste management. The objectives of this law stated that:

> "This law shall confirm the need to provide to the greatest degree possible health and social welfare for the nation and citizens, protect its natural wealth and economic resources, preserve its historical and cultural heritage, and avoid any immediate or long term damage or side effects which may appear as a result of developments, industrial, agricultural or building programmes or other developments ... This law shall aim to protect, develop and use in the most intelligent manner without any damage occurring to the various types of life on the land of the sultanate and its economic quarters, particularly damage resulting from pollution of the basic ecosystems such as air, water, soil and marine, animal, and plant wealth." [99]

Section III of this law dealt with waste management and pollution control, article 14 required the submission of a feasibility study which must include a detailed chapter on the possible environmental effect of any industrial, construction or any project which might have effect on the environment. However this requirement was not clear enough about the scope and content of Environmental Impact Statement.

The administrative structure which dealt with environmental issues (the Council for Conservation of Environment and Prevention of Pollution), was

modified to establish the Ministry of the Environment and Water Resources in 1984 (47/84). Later in 1990 a new Ministry combined the municipal authorities with the existing Ministry of the Environment. This ministry was called The Ministry of Regional Municipalities and Environment, and included a directorate general of Environmental Affairs. Considering the young age of this state, Oman has managed to establish an elaborate administrative structure to implement its ambitious environmental laws, which are considered the most comprehensive in the Gulf region, especially when taking into an count the strict supervision of implementation and review of existing laws. In contrast to most developing countries, the Sultanate of Oman has managed to avoid environmental stresses and pollution problems from an early stage in its development programmes. Its waste management laws have helped in controlling and avoiding water contamination, air pollution and municipal waste disposal. Oman gave special attention to Nature Conservation. The first reintroduction of the Arabian Oryx to its natural habitat took place in the Omani desert. The ministerial decree (128/93) completely prohibited the cutting of any trees, in addition to collection and transportation of fire wood. According to the ministerial decree (207/93) Hunting is also completely prohibited including all kinds of animals and birds at any time of the year.[100] What distinguished Oman environmental policies from other countries in the region is the indiscriminate implementation of these strict laws.

3.6 Summary

The discussion in this chapter has demonstrated that structuring environmental decision making process and formulating environmental policy can be a very complicated task. The critical issue of political culture and constitutional rights play an important part in the shape of any environmental policy, in addition to

the dilemma of balancing economic, social, ethical, and ecological values, which make environmental policies unique in each part of the world. However, learning from the experience of each other can help in assessing and improving each country's difficulties.

The conflict between the authoritative power and the public plays an important role in crystallizing environmental policy. It is essential to involve the public in all levels of decision making processes, which can substantially enrich the process by incorporating public concerns. Environmental awareness and education can be one way to attract the public to the environmental debate. The environmental administrative structure tends to be a major obstacle in implementing environmental policies and laws. Several examples in this chapter demonstrated that there is a tendency to consolidate environmental agencies into a major body. On the other hand other examples experimented with distribution of power and authority. What is vital is the continuous evaluation of the system in order to avoid any conflict and overlap of jurisdiction. The mixture of balanced power distribution and agency consolidation, can ensure smooth policy formulation and neutral monitoring and implementation.

It is interesting to trace the ideological differences in the political arena. Where many politicians and concerned public view environmental policies in terms of their affect on human quality of life, this is reflected on environmental policies dealing with pollution, waste management, and health hazards. On the other hand, policies dealing with nature conservation issues such as wildlife reserves and biodiversity usually find less support from politicians and the public. What justifys this position is that politicians are accountable to the public. The concept of Divine

Ecology can add a vital ingredient to the political formula, where Islamic Shari'ah emphasised that, although the authoritative power including decision makers and law enforcers are accountable to the public in this life, most importantly they are accountable to God in the hereafter.

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Chapter Four

Saudi Arabia - The Environment, The Government, and Tradition

Introduction

> All God's bestowed wealth, are the property of the state as defined by law. The law defines means of exploiting, protecting and developing such wealth in the interest of the state, its security and economy ... No privilege to be granted and no public resource is to be exploited without a law ... The state works for the preservation, protection and improvement of the environment, and for the prevention of pollution.
>
> **The Saudi Constitution**, "Basic Law of Government" Chapter four and five.

This chapter provides the background information to understand environmental policies in Saudi Arabia. It consists of four sections. The first two introduce the Saudi environment, including general description of geology, climate, and the main physiographic regions. It also discusses the current environmental stresses, most of which have resulted from recent development projects, urban growth, oil production related activities, and depletion of natural resources. The third section discusses the political system and culture in the country to understand their possible influence on environmental policies. This part includes a review of the Saudi constitution and the newly formed Consultative Council "*Majlis Al-Shura*", in addition to government structure and decision making process. The fourth section introduces and discusses traditional environmental ethics in Saudi Arabia by using the *Hema* system as an example. A summary concludes the chapter.

4.1 The Environment

Saudi Arabia is located in the south west corner of Asia, occupying a large part of the Arabian Peninsula. Due to undefined boundaries, especially in the southern borders, the exact area is not known. However, the estimate varies from 2,149,690 square kilometers (839,723 sq. miles) to 2,331,000 square kilometers (910,546 sq. miles). [1] It extends from 32° 15' in the north to 16° 30' in the south. The Red Sea lies to the west of Saudi Arabia and the Arabian Gulf lies to the east. (See Fig. 4.1 for Map of Saudi Arabia)

4.1.1 Geology

The Arabian Peninsula is a huge crustal plate divided into the Arabian Shield and the Arabian Shelf. The shield is an ancient land mass, part of the Nubo-Arab shield complex. It is composed of igneous and metamorphic rocks of pre-Cambrian age. It occupies the western part of the peninsula. By the Cambrian times, about 550 million years ago, the shield was a stable land mass and formed the platform on which the cover rocks of the Arabian Shelf were deposited. Volcanic activity occurred from the Tertiary period to the recent past and produced extensive lava fields, or *Harrahs* , whose horizontal plateau-like surfaces cover some 99,000 sq. km of the shield's surface.[2] (See Fig. 4.2 for Generalised Geology Map)

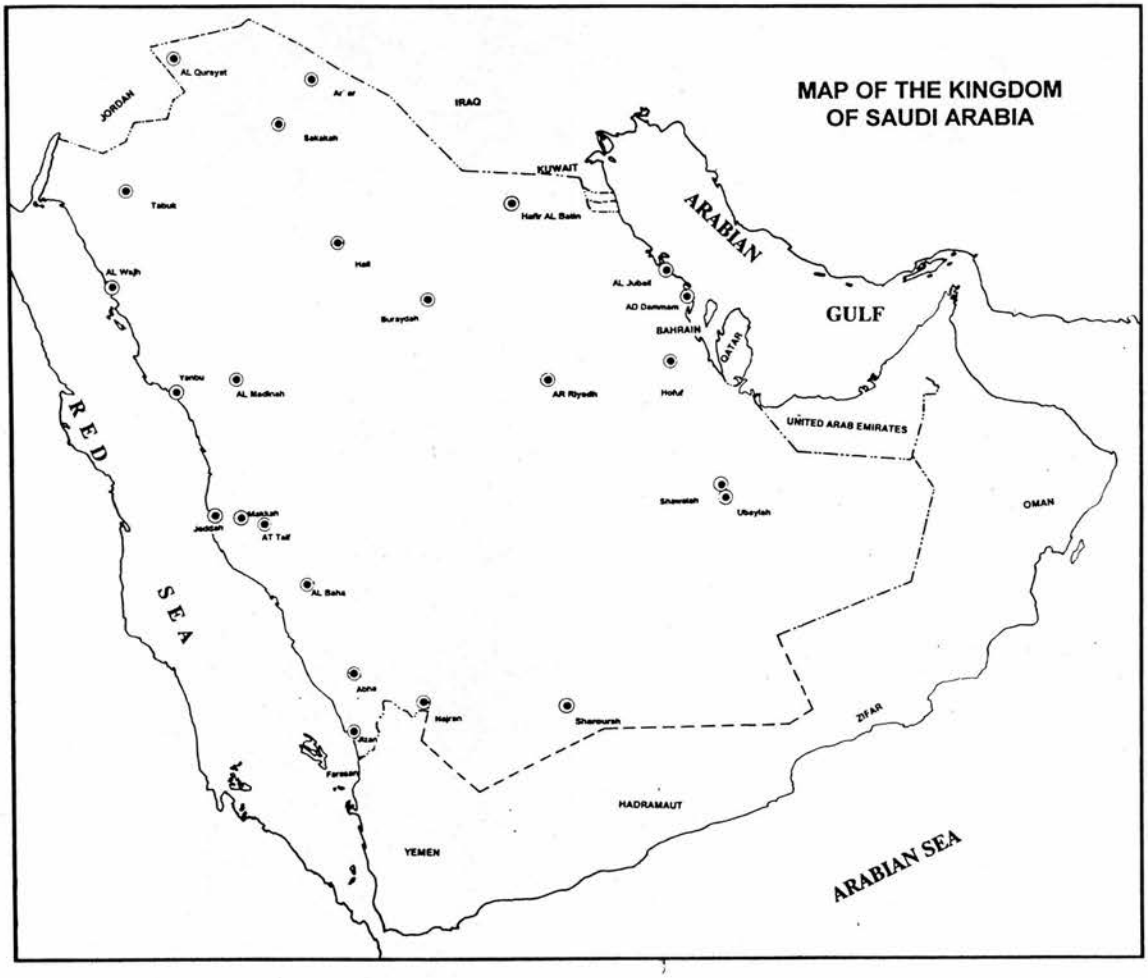


Figure 4.1 **Map of The Kingdom of Saudi Arabia.**

Source: MOP, **Sixth Development Plan.** 1995. p. 35.

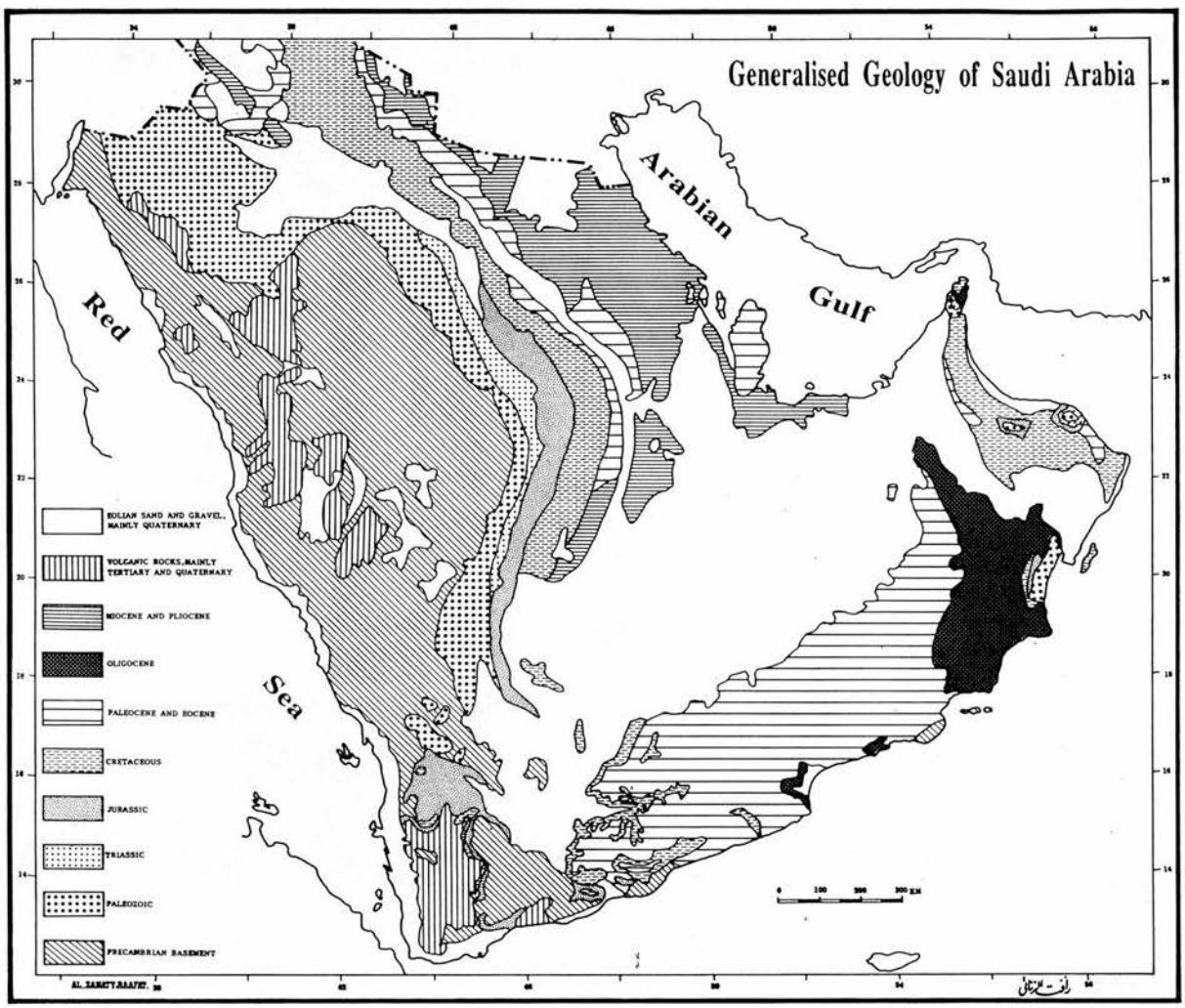


Figure 4.2 Generalised Geology of Saudi Arabia

Source: G. Child & J. Grainger, **A Plan to Protect Areas in Saudi Arabia,** 1990.

The Arabian Shelf lies to the east of the shield and makes up two thirds of the peninsula. The shelf slopes gently towards the Gulf and Al-Rub Al-Khali. It is interrupted by a series of escarpments in which Paleozoic, Mesozoic, and lower Tertiary beds out crop. Unconsolidated Quaternary-aged sands and gravel blanket most of the eastern parts of Saudi Arabia. Aeolian sands cover large parts of the north, east and south of the country.[3] (See Fig. 4.2 for generalised geology map)

4.1.2 Climate

The climate of Saudi Arabia is influenced by the sub-tropical high pressure ridge which is part of the tropical circulatory system known as the Hadly cell. This high pressure ridge weakens during the winter and is displaced to the north. Occasionally disturbed tropical monsoon weather may reach the Kingdom, bringing rain to the south in the summer. In winter, the mid-latitude low pressure system penetrates the northern regions giving rise to most rain, or snow in the region. At the same time, the remains of the cyclonic weather systems of the eastern Mediterranean may also extend into the country. Orographic rainfall, due to high altitudes and proximity to the Red Sea, augments precipitation along the south-western escarpment. Daytime on-shore sea breezes force the moist air from the Red Sea to ascend, giving rise to afternoon showers and thunderstorms. Annual precipitation in the mountains south of Taif is above 125 mm and may exceed 600 mm. Rainfall in these mountains is also much less seasonal than elsewhere in the country.[4] (See Fig. 4.3 for Annual Precipitation Map)

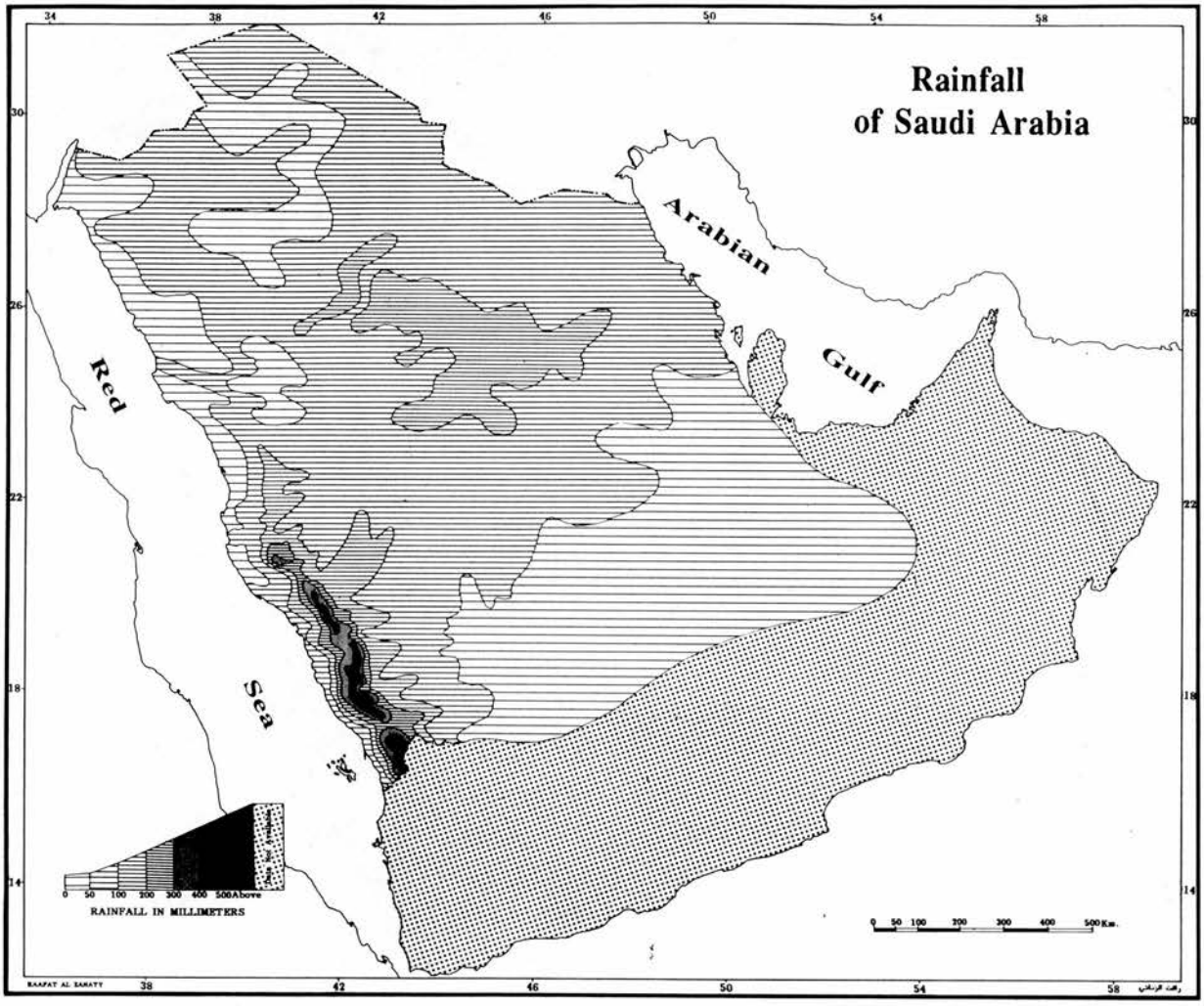


Figure 4.3 **Annual Precipitation Map**

Source: G. Child & J. Grainger, **A Plan to Protect Areas in Saudi Arabia.** 1990.

Temperatures can vary considerably from winter to summer. In winter cool temperatures prevail over the north and central areas with frost not uncommon at night and occasional snowfalls in the northern desert and Hejaz mountains. Western coastal plains maintain warm weather during winter. In summer, the temperature tends to be very hot in most areas averaging between 31°-38° C along the Red Sea coast to 40°-42° C in the interior. Along Al Hejaz mountains in the Western part of the country, a more moderate temperature prevails averaging between 24° C in Al-Sawdah mountain to 30° C in the lower altitude. This hot summer temperature is accompanied by low humidity in the interior and usually high humidity along the sea coasts.(See Fig. 4.4 for Relief of Saudi Arabia)

4.1.3 Physiographic Regions

Most sources give different geographic classifications of Saudi Arabia. However, the following is a widely used classification:

1- Tehamah Coastal plains, along the Red Sea

2- Al Hejaz (Al-Sarawat) mountains, stretching from Al- Aqaba Gulf in the north to Yemen in the south.

3- Najd plateau to the east of Hejaz and extending towards the Arabian Gulf.

4- Eastern plateau, Al-Summan and Al-debdiba

5- Desert regions consisting of al rub al Khali in the south, al Dahna in the east, and al Nufud in the north.

6- Northern plateau.

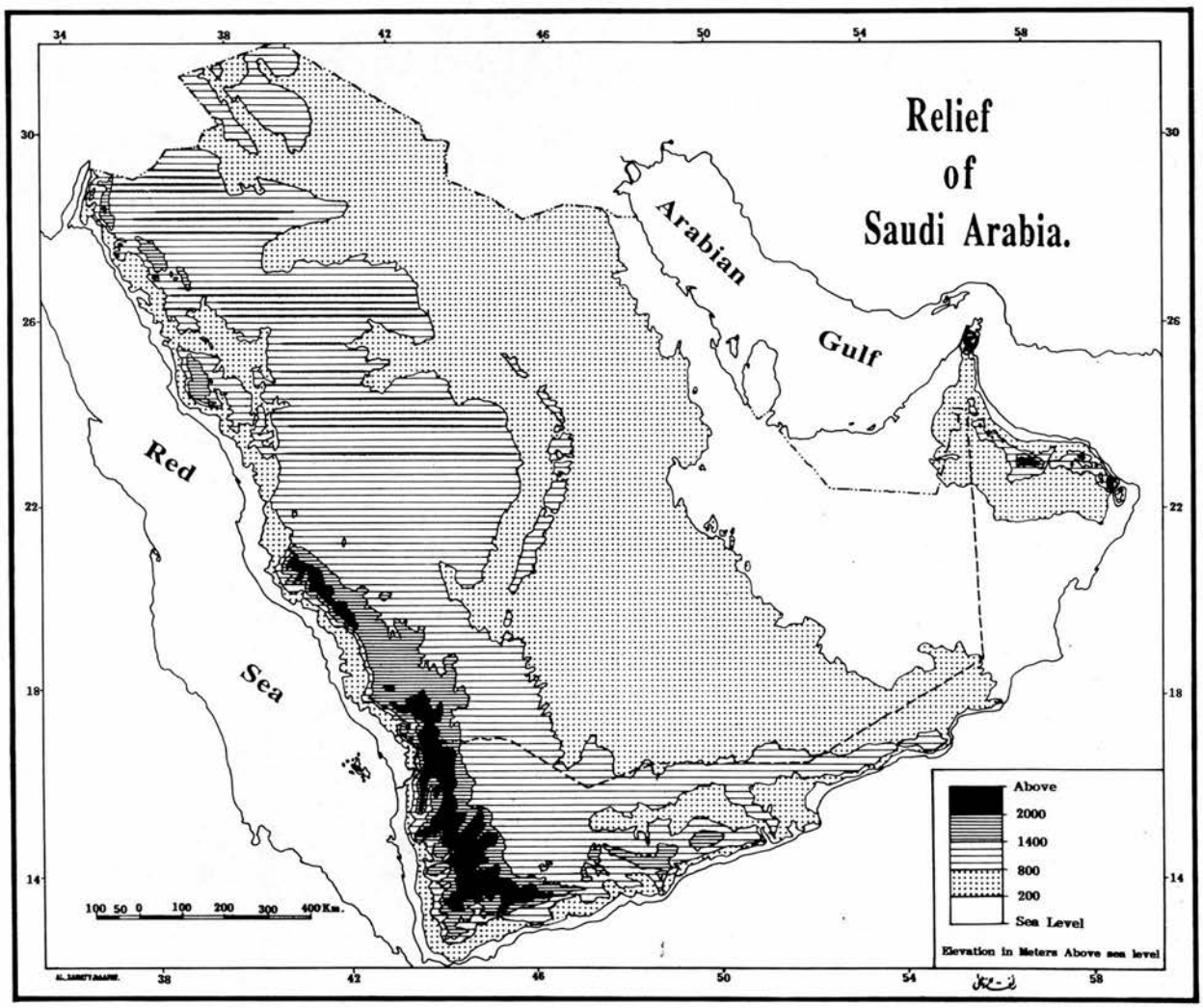


Figure 4.4 Relief of Saudi Arabia

Source: G. Child & J. Grainger, **A Plan to Protect Areas in Saudi Arabia.** 1990.

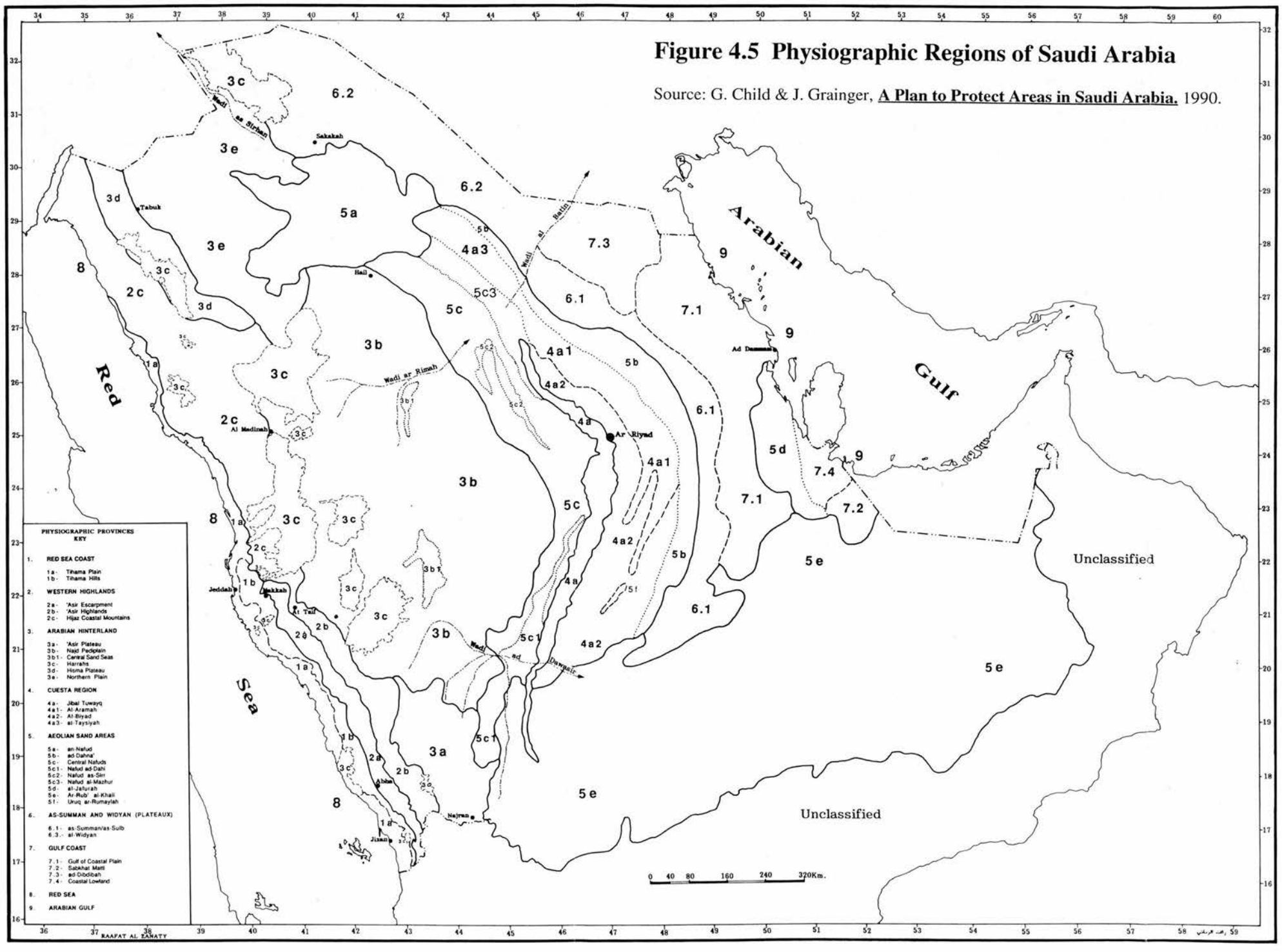
This generalized classification is not accurate due to the wide variation in physiography and geomorphology of the Arabian peninsula. Child and Grainger (1990) suggested a physiographic classification of the country, which divides it into seven terrestrial physiographic regions with 30 sub-regions, and two marine regions. However, they suggested that this should be viewed as a preliminary delineation of the physiographic units in the Kingdom significant to planning protected area. It nevertheless provides a solid basis for planning adequate representative protected area coverage of the terrestrial physiography of the Kingdom which ties in reasonably well with the distribution of ecotypes.[5] The following is a summarized description of these regions as suggested by Child and Grainger (1990).[6]

1- **Tehamah**

This ancient name is given to the coastal plain along the Red Sea which forms a narrow transitional zone between the shelf of the Red Sea and the high scarp mountains to the east. Along its seaward margin the Tehamah is principally a low lying coralline depositional surface, but grades upwards towards the east onto an erosional surface, or pediment, cut into the basement rocks of the Shield. Much of the structure and lithology of Tehamah is masked by Aeolian sand, and gravel washed down by wadis draining the coastal mountains. Tongues of basaltic lava extrude onto the plain near Jeddah and Jizan. The coastal littoral has only 50 mm of annual precipitation. Cultivation is limited mainly to the major wadis in the south where advantage can be taken of the run-off from the escarpment. (See Fig. 4.5 for Physiographic Regions of Saudi Arabia)

Figure 4.5 Physiographic Regions of Saudi Arabia

Source: G. Child & J. Grainger, **A Plan to Protect Areas in Saudi Arabia.** 1990.



2- Western Highlands (Al- Hejaz Mountains)

A belt of mountains stretches along the Arabian Peninsula forming a spectacular escarpment, especially in the south. The escarpment, which rises to 3,000m above the coastal plain, is carved into the steep western edge of the tilted Arabian shield and has resulted from the faulting, rifting and uplift associated with the formation of the Red Sea. These and associated mountains form a belt 40 to 150 km wide and are divided into three sub-regions:

a) Asir (Al Hejaz)[7] Escarpment, rises abruptly from the Tehamah foothills at about 400 m to an altitude of over 3,000 m at Jabal Al- Sawdah near Abha. The terrain is characterised by a series of knife-edge ridges that are largely structurally controlled and run parallel to the scarp. The escarpment forms the east-west drainage divide of the Peninsula.

b) Asir Highlands (Southern Hejaz Highlands), lies above 1,400 km and consists of a narrow belt of high country some 50 km wide which parallels the escarpment. The area is deeply incised, slopes towards the east and is drained by the two extensive wadi systems of Wadi Bishah and Wadi Tarabah which debouch onto the Najd plains. Altitude combines with a residual monsoon effect to give the region the highest rainfall in Saudi Arabia. The region supports the only significant forested area in the Kingdom and terraced agriculture is extensive.

c) Al-Hejaz Coastal Mountains, lie north of the Makkah gap and become progressively lower and generally less rugged as they extend northwards. The width of the mountain chain reaches a maximum of 140 km north of Al-

Maddinah, though the range is interrupted by block fault mountains which strike obliquely across it. Rainfall declines towards the north to between 50 and 100 mm per year. (See Fig. 4.5)

3- **Arabian Hinterland**

The vast trapezoidal shaped area east of the western highlands is one of the largest physiographic provinces in Arabia and consists of five sub-regions:

a) Asir Plateau, is quadrangular and lies to the south and east of the Asir highlands. It is a tilted peneplain 700 to 1,000 m above sea level. The region is physiographically linked to Asir highland , forming a transition to the open pediplain of Najd. Lying in the rain shadow of the high scarp mountain to the west, it receives usually from 100 mm to 300 mm of rain per year.

b) Najd (Central) Pediplain consists of coalescing crystalline rock pediments and desert plains covered with thin sand and gravel deposits intruded by prominent inselbergs. The surface slopes gradually towards the south and east from around 1000m to about 800 m. The extensive Wadi Al-Rumah drains the north while the major wadis of Bishah, Tathlith and Ranyah join to form the great Wadi Al-Dawasir and drain to the south. Rainfall on Najd Pediplain is scant and erratic, amounting to between 50 and 100 mm per year, but the effectiveness of even this low precipitation is depressed by the high temperatures.

c) The Harrahs are formed of 13 major lava fields of olivine basalt, totaling some 99,000 sq. km in western Saudi Arabia. The basalt of the Harrahs dates from the Oligocene to recently, with that near Al-Madenah from 1256 AD. Harrahs often provide important wildlife refuges because access is difficult.

d) The Hisma Plateau, is a medium-altitude block of ancient Cambrian/Ordovician sandstone in north-western Saudi Arabia. The peneplained surface is deeply dissected by canyons to form a dense maze of mesas and buttes, and is overlain in the south-west by the combined lava flow of Harrat Al-Raha and Harrat Uwayrid.

e) The Great Northern Sandstone Plain, of younger Devonian age rocks extends eastwards from the Hisma, as gently sloping plains. The open expanses of these plains are dotted with isolated buttes and mesas and abut the Al-Tubayq escarpment in the north and the Nafud basin in the east. (See Fig. 4.5)

4- **The Cuesta Region (Sedimentary Najd).**

The cuesta region forms the sedimentary Najd which lies immediately to the east of the Najd pediplain and is made up of limestone, sandstone and shale. The region is typified by a cuesta morphology forming a series of west facing escarpments, formed on the upturned edges of the sedimentary beds that dip gently eastwards. The Tuwayq escarpment rising abruptly to 240m above sea level, is the most prominent physiographic feature and extends in a north/south arc for 1200 km. East and west of Tuwayq there are depressions containing stringer sand seas, as Al-Dahi, Al- Zilfi and Al-Washm lowlands. To the east gravels of quartzite and sandstone cover the flat tract of Al-Biyad and Al-Wasi plains which abut the Dahna sands and mark the eastern edge of the escarpment zone. Annual rainfall in the Riyadh area amounts to about 100mm but this decreases steadily to the south so that at Al-Sulayyil (wadi Al-Dawasir) precipitation amounts to only 23mm per year.

5- Aeolian Sands

About a third of the Arabian Peninsula or 855,000 sq. km is covered by wind-blown sand. This area can be divided into five main sub-regions:

a) The Great Nafud covers 57,000 sq. km in the north of the country and is characterised by iron-oxide stained sands in closely spaced crescentic ridges and linear (*uruq*) type dunes. The Nafud is sparsely vegetated with no oases in its interior.

b) Al-Dahna is a long narrow belt of sand generally less than 550 km wide which extends in an arc for nearly 1,200 km, The parallel sharp crested dunes and the length of the arc combine to form one of most distinctive continuous physiographic features in Saudi Arabia.

c) The central Nafuds, is associated with low lying areas to the east and west of Tuwayq. The terrain is dominated by sand mountains and *uruq* type dunes, and spread southwards in a discontinuous chain of elongated Nafuds from the Great Nafud in the north to Wadi Al-Dawasir.

d) Al-Jafurah is a long northwardly tapering zone of active barchan dunes to the east of Al-Samman Plateau on the Arabian Gulf coastal plain. This sand sea extends south from near Al Hofuf and eventually merges with the sands of Al-Rub Al-Khali and has encroached onto the agricultural lands centered on the large oases of Al-Ahsa.

e) Al-Rub' Al-Khali (the Empty Quarter), is know locally as *Al-Ramla*, "the sands", and is believed to be the world's largest expanse of arid sand desert. The sands occur in a huge basin and cover 640,000 sq. km. The various dune formations

found in Al-Rub' Al-Khali are representative of all the major classes of Aeolian sand terrain generally recognised in the Arabian Peninsula. (See Fig. 4.5)

6- **Al-Summan and Widyan Plateaus**

Al-Summan is a southern extension of the large Syrian plateau and covers the world's largest oil field of Al-Ghawar near Al-Hofuf. It is situated between Al-Dahna sand belt and the low plains of the Arabian Gulf coast and is a flat, barren sand-covered limestone feature some 70 to 250 km wide. Al-Sulb Plateau occupies the central section of Al-Summan and is an undulating surface of low residual hills. A continuation of Al-Summan, Al-Widyan (plural of *wadi*), extends westwards where it gradually ascends to 800 m to form a major watershed. Drainage from the north-east is towards the Euphrates river, while that from the west of the divide, marked by the Hammad plains, is north towards the Mediterranean along Wadi Al-Sarhan. (See Fig. 4.5)

7- **Arabian Gulf Coastal Region**

The gradient towards the coast is very gradual and the coastline is characterised by extensive salt flats or *Sabkhas* and in places the water-edge may shift several kilometers where large *Sabkhas* like Sabkhat Matti which has an area of 6,000 sq. km. Inland the salt flats give way to low rolling sandy, rather featureless plains with occasional mesas, outliers of the Al-Summan plateau. Al-Dibdidah is an extensive plain covered with rounded, water-born gravels that spreads north and eastwards and is testimony of the greater flow in wadis such as Al-Rumah and Al-Batin during past wetter epochs.

8- **The Red Sea**

The Red Sea is approximately 1,930 km long but narrow, averaging only 280 km in width. It is part of the East African system, being a continuation of the Indian Ocean ridge-rift sequence which accounts for its great depth. The northern Red Sea is a wide, steep-sided trough over 1,000m deep, but this narrows in the south to trench with depths of over 2,500m in places. These deep waters are separated from the Gulf of Aden by a shallow sill only 100 to 130 m below the surface, some 140 km north of the Strait of Bab Al-Mandab. This has significant effect on the limnology of the water body.

The Gulf of Suez and the Gulf of Aqaba at the northern end of the Red Sea contrast with each other. The former is relatively shallow with a mean depth of 65 m, where the Gulf of Aqaba is very deep, with a depth of over 1,000 m and a topography very much like the main basin, including a shallow sill some 250 to 300 m below the surface at the entrance at the Strait of Tiran.

9- **The Arabian Gulf**

Unlike the Red Sea the Arabian Gulf is a broad shallow roughly rectangular sea approximately 1,000 km long and 230 km wide. The entrance from the Gulf of Oman is 60 km wide. The Gulf resulted from plate tectonic, 2 to 5 million years ago. Deep seated tectonic movements led to the uplifting and folding of the Zagros mountains in Iran, through the northerly movement of the Arabian plate, and formed the north sloping proto-gulf. The Gulf is shallow, with a mean depth of 35m and a maximum depth on the Iranian side of 165 m. Shallow areas with less than 5m of water make up to 18% of the Gulf area. There is no continental shelf although there

is a marked increase in the bottom gradient at the 20m contour along the Arabian coast.

4.2 Environmental Stresses

It is assumed that human settlement has existed in the Arabian Peninsula since the time of Adam and Eve; the legend suggests that our ancestors met in Arafat near Makkah after their descent from heaven. For thousands of years the residents of Jeddah believed that Eve was buried under the famous tomb, then outside the city walls. The long history of human occupation placed some stress on the environment, but human impact was minimum for a long time due to the scattered population. In the past the Arabs depended on wildlife for survival. On the other hand the introduction of herding, of both domesticated cattle and sheep some 9,000 years ago were carefully managed to sustain natural resources. A nomadic style of life meant a fusion of human impact over a large area of land.

The rapid change of lifestyle in the last 30 years due to economic growth, has concentrated population in urban centres. Rural areas experienced new kinds of environmental stresses. The most recent population census of 1992 estimated that 17 million people live in Saudi Arabia, with a high population growth of 3.8%. The following will give a brief discussion of the main current environmental stresses in the Kingdom of Saudi Arabia. It should be noted that little research has been conducted on the subject, and the topic is beyond the capacity of this research.

4.2.1 Pollution

Although pollution is a relatively new problem in Saudi Arabia, urban growth and industrial activities, especially oil and petrochemical industries, have

increased air, water and sound pollution in many parts of Saudi Arabia. The clear skies and strong solar radiation provide suitable conditions for photochemical air pollution, such as ozone and other oxidants. Because photochemical oxidants require several hours to form, the effect of emission sources are found several tens of kilometers downwind. For example prevailing wind direction may cause the effect of emission from Jubail petrochemical industries to be concentrated near Dammam and Dhahran.[8]

1- Air Pollution

The sulfur pollutants, sulfur dioxide and sulfates, and inhalable particulates constitute a major category of air pollution. The most important sources of sulfur dioxide are the flaring of sulfur containing natural gases and refinery effluents and those industrial processes that make use of relatively low-grade fossil fuel. The combination of natural dusts and sulfate aerosol can have a more harmful health effect than of these two pollutant types separately.[9] Carbon monoxide and lead aerosol can be found in heavy traffic areas, such as Jeddah and Riyadh.

Leaded fuel is still in use in Saudi Arabia, despite its restriction in many parts of the world. It is suggested that unleaded fuel will be available commercially in the Saudi market in 1995. However it is not known if its use will be enforceable by law. In 1986 the government enforced a vehicle inspection law, this law requires the annual inspection of vehicle engines, air to fuel ratio, exhaust system (hydrocarbons and carbon monoxide) and other tests.[10] Sabbak (1994) speculated that if the system is applied the way it should be it will lower the pollution level, with preliminary results showing a downward trend in ozone concentration.[11] However, the enforcement of this inspection system was relaxed in 1991. The most

significant point source pollution in Saudi Arabia includes: Fossil-fueled power plants, Smelters, Cement plants, Desalination plants, Refineries, and Petro-Chemical industries.

The Metrology and Environmental Protection Administration (MEPA) has established air quality standards for the major air pollutants. They also established limitation on the amount of pollutants that can be emitted from various industrial sources.[12] SRI International (1984) suggested that, although motor vehicles appear to be responsible for more than half the emission of CO, NO, VOC, and lead particulates in Saudi Arabia, MEPA has not yet issued standards governing such emission.[13] The vehicle inspection law (1986) attempted to deal with this problem, however, as already stated the enforcement of this law was relaxed after 1991.

2- Waste Disposal

The Ministry of Municipal and Rural Affairs is the responsible body for maintaining hygiene environment in urban abd rural areas. Most cities and towns have no sanitary system. MCE (1992) suggested that there are over 350,000 house connected to a sewage system compared with 600,000 with water supply.[14] This has lead to the polluting of aquifers and an increasing problem of random dumping of raw sewage in the sea and urban fringes. Garbage collection in large cities is contracted to private companies. In most cases this activity is carried out successfully, however, sanitary land filling is the common method used which might result in future problems. In rural areas the problems are more evident were dumping grounds litter the countryside causing serious health hazards. Rapid urban growth in the last twenty years resulted in severe environmental problems on the

urban fringe. Waller (1989) discussed this issues in relation to Jeddah, when he explicitly tell the story of urban expansion:[15]

> "The desert becomes subordinate to the needs of the town ... Rock outcrops and hills close to the towns become quarries for concreate and road stones. Topsoil from the wadis is removed to form private and municipal gardens. Above all the desert becomes a tip. The vast quantities of excavated materials, rubble from old buildings and old cars are dumped in the desert, usually on the nearest area of unfenced land ... Palaces, residential areas, sculptures, estate roads with lamp posts all rise out of a sea of rubble and discarded junk."

This description of the urban fringe is valid for all cities in Saudi Arabia, many are still unable to reclaim such sites. MOMRA have no clear policy for urban conservation and no written regulations for waste disposal. Further discussion of MOMRA's role is given in chapter six.

4.2.2 Natural Resources

This sub section reviews the status of four areas; Water, Rangelands and Forestry, Wildlife, and Marine environment.

1-Water

In extremely arid environments, like Saudi Arabia, water is a very valuable resource. The main source of water comes from underground aquifers, seasonal streams and rain, especially in the mountain range, and desalination plants. The increased demand for water in cities and for industrial and agricultural uses placed considerable pressure on this valuable natural resource. The large subsidized wheat production projects in the early eighties, depleted huge amounts of water from aquifers. This problem became obvious when farmers experienced a dramatic decrease in water levels in addition to increased salinity. Recently the government acknowledged the problem and criticism of the unrational use of such a valuable resource was allowed in local news papers and magazines. The Sixth plan recognised

the need to rationalise underground water in the kingdom. (Development plans environmental policies will be discussed in chapter five).

Industrial activities produce a large amount of contaminated water, and in many cases it is disposed of without treatment, which contaminates ground water with toxic material. Overflow of fertilizers and pesticides add to the problem in the intensive agriculture zones such as Al-Qaseem, and wadi Al-Dawasir. SRI International (1984) noted that:

> "in some areas water supply, waste water treatment, agricultural use, and solid waste disposal all accrue in the shallow ground water aquifer. The extent of the contamination of these aquifers is unknown because water quality monitoring is not sufficiently extensive and does not include determination of organic contaminant ... Despite the absence of comprehensive data, there is evidence that Saudi Arabia's alluvial aquifers and perennial streams are being degraded by human activities, primarily urban growth, agriculture, overdraft, and solid waste disposal."[16]

Little of waste water reaches the treatment plants which exist in some cities. MEPA (1992) estimated that 1650 million m3 are used annually for domestic and industrial purposes. 352 million m3 (21%) reach treatment plants, but only 110 million are used, the reminder, 69% of the amount treated is wasted by being pumped into the sea or dumped onto the desert.[17] Water quality is monitored by MAW, while MEPA is the responsible body for setting standards. Its draft revision of water quality standards (1991) included: inland surface water, marine waters and ground waters, with each sub-divided into two or three use sections.[18] SoE-92 suggested that "On the basis of total dissolved solids being 500 ppm or less, about 36% of pipeline water in the Kingdom is drinkable."[19]

2- Rangelands and Forest

In Saudi Arabia, as in other arid and semi- arid regions, nomadic pastoralism has evolved over many centuries as a rational response to inconsistent rainfall and the resultant fugitive nature of plant resources. Traditional pastoralism is generally considered to exploit the natural sources of fodder at or near a sustainable level. Two patterns of livestock husbandry are common in Saudi Arabia. Sheep and goat herding is widespread, although traditionally it tends to be located in better watered areas and is associated with village agriculture. Camel herding was concentrated in the drier interior, with herders using the central desert in winter and moving to the northern and coastal areas in spring and summer. Traditional herding patterns have undergone significant change, and although accurate livestock census data are unavailable, estimates indicate herds have increased markedly in recent years. This increase of herding, encouraged by high mobility and government subsidies for herders, severely degraded the fragile desert vegetation.[20]

Rangelands surveys in the 1970's indicated that 85% of the land was severely degraded. The situation has continued to deteriorate, judging from observation covering a substantial part of the Kingdom, undertaken by the National Commission for Wildlife Conservation and Development (NCWCD) between 1987 and 1990. Very few sites have been located during these extensive surveys where there are not distressingly stark signs of recent and severe range degradation.[21] Overgrazing, combined with wood gathering, have stressed Rangelands to the point of exhaustion. Traditionally wood gathering was sustained by means of norms and tribal laws, where in some cases dried wood only were allowed to be cut, and respect of trees as God's gift were part of tribal beliefs. In addition, tribal and village reserves such as *Hutat* and *Hemas* protected natural vegetation from overgrazing and excessive

cutting. With the rapid social changes in Saudi Arabia in the last thirty years tribal norms and laws have diminished.

Despite the inexpensive availability of other sources of fuel, demand for fire wood increased. Fire wood became part of the traditional heritage and urban dwellers consume large quantities of wood and charcoal for heating in winter and cooking, as a way to reconstruct the old way of life. The introduction of foreign labour also added to the problem, since they are not concerned with the long term availability of this valuable resource, consequently instead of cutting the dried part of the tree they might pull the whole tree from the roots by four wheel drive vehicles. Demand for charcoal and firewood has increased in the last ten years, leading to expanding wood and charcoal markets in the main cities and towns. Alshodouki (1990) suggested that in three markets, namely Riyadh, Madenah, and Buraidah 78,476 trees are sold annually as charcoal or firewood.[22]

The only significant growth of woodlands in Saudi Arabia can be found along the Hejaz escarpment in the western part of the country. Juniper, acacia, and olive woodlands form a belt in the upper part of the escarpment at an elevation between 1400m to 3000m. In many areas, especially around Taif and Al-Baha, recreational activities have placed pressure on this sensitive habitat, in addition to the extensive wood cutting and farming activities. Severe drought in the last twenty years have also contributed to the problem. Very little regeneration of juniper can be found in the stressed areas, due to heavy human impact and heavy cutting, which disturb the life cycle of the woodland.

3- Wildlife

Destruction of habitat and overhunting are the major contributors to wildlife depletion in Saudi Arabia. However, Child and Grainger (1990) suggested that excessive hunting draws a high public profile, while natural mortality is easily overlooked. Accounts of excessive killing by individual hunters excite the imagination and may serve to reinforce the conclusion that hunting alone eliminated a population.[23] They argue that several of the Saudi species have demographic properties similar to their African relatives, who can stand substantial heavy hunting provided their habitat remain intact, but many disappear without hunting if their habitat are severely overgrazed by livestock. When populations of herbivores like oryx and afri slide to extinction ahead of predators like the wolf, which is in greater direct conflict with man and his stock, it is a clear warning of habitat degradation and the threat that this poses to a range of species.[24] They conclude that "It is impossible to avoid the conclusion that terrestrial habitats in much of the Kingdom have been severely downgraded ... (and) habitat degradation has been a significant factor in the decline of wildlife."[25]

Almost all of the large mammals of the Kingdom are threatened. Those which are extinct include the Arabian oryx, the cheetah, the ostrich and probably the Afri. Species which fall into the endangered, vulnerable or rare categories include the wolf, striped hyena, jackal, leopard, caracal, and fennec. The ibex, the idmi and the rheem are also threatened.[26] On the other hand the baboon population is on the increase due to the disappearance of natural predators such as the cheetah, the leopard and wolf. This rapid increase causes a severe nuisance especially to the mountain villages along Al-Hejaz mountains. Currently the NCWCD is carrying out a study to control their population.

Marine mammals are under severe pressure from the oil production industry specially in the Gulf. Five species of marine turtles can be found in Saudi Arabian waters, of which the green and hawksbill turtles both occur in high numbers. Both are associated with coral formation in the Red Sea and the Gulf where they are still plentiful, although the two species are regarded as endangered internationally. Dugong also occur in high numbers. A recent study by MEPA indicated that the Saudi Arabian region is one of the two important areas in the world for dugong. The main threat to marine life in the Gulf is oil pollution, habitat destruction, and to a lesser extent, fishing. In the Red Sea they are habitat destruction, fishing and human interference. [27] Currently, Saudi Aramco is planning for offshore oil exploration in the northern part of the Red Sea, This could bring a new threat to the relatively undisturbed habitat, along the Red Sea coast.

The Red Sea and the Gulf coasts and their associated islands are globally important for birds. The tidal flats of the Arabian Gulf are considered among the worlds most important over-wintering areas, annuaely hosting between one and two million waders of some 125 species. A number of the Saudi Arabian Gulf and Red Sea Islands support important breeding colonies of sea-birds and serve as resting sites outside the breeding season. The coastal wetlands, mangroves and inter tidal areas are also important to a whole range of resident and migratory species, including waders, storks, herons and many others.[28] Resident and migrating birds in Saudi Arabia are under severe pressure especially from hunting. Symens (1990) describes the situation" Men with rifles and shotguns and children with slingshots kill huge number of migrating birds yearly, mostly for fun."[29] However, hunting by traps is widely practised along the Red Sea for local consumption, and more recently

for commercial use due to the high mobility provided by motor vehicles. Turtle dove, *Gumry* (Streptopelia turtur) are trapped on a large scale, and are considered part of the hunting season tradition in Al-Hejaz. Symens (1990) suggests that:

> "Although the turtle dove has not yet attained the status of rare or endangered species, it has been revealed that there is a clear decrease in breeding numbers in Europe and Russia since 1970. Also the local trappers mark a decline in number from year to year. The turtle dove is shot in large numbers in Jordan, Lebanon, Cyprus and Greece."[30]

Houbara Bustards were nearly wiped out in the last 20 years, due to extensive hunting by shotguns and the introduction of four-wheel drive vehicles into traditional falconry. The same applies for most bird species in Saudi Arabia which suffered large decline in their population due to hunting activities, loss of habitat by pollution, industrial and construction projects, and urban growth.

4- Marine

Marine habitats along the Red Sea and the Gulf are under severe environmental stress especially from extensive oil production and transportation activities. Oil spills represent the most dangerous environmental accidents in the Arabian Gulf. This was evident in 1983 from the Iranian Nowruz spill, which discharged 1 million barrels. In the five year period between 1978 and 1983 16 spills larger than 1,000 barrels occurred in the Gulf.[31] However the largest disaster occurred during the Gulf war in 1991 when a huge oil spill from the destroyed Kuwaiti fields polluted large areas along the Saudi coast, forcing the government to close down the desalination plant in Jubail which supplied the capital city Riyadh. This oil spill destroyed large numbers of marine life, in addition to the permanent destruction of the shrimp industry in some areas. In addition industrial and shipping accidents, military activities, unregulated discharge from oil refineries and sewage

plants add to the problem. A great deal of industrial, commercial and domestic solid waste has been dumped in the coastal zone, particularly along the Gulf Coast. This has lead, not only to the possibility of toxicants into the environment, but also the dispersal of litter along the coast through tidal and other water movement. The shrimp industry suffered the worst destruction of marine habitat. A report submitted to the Symposium on Shrimp Fishing, held in Nov. 1994 indicated that the current rate of shrimp fishing represent only 5% of that a few years earlier. The production was reduced from 2,254 tons in 1982 to 112 tons in 1993. The report suggested that oil pollution, in addition to land fill and discharge of sewage for the last thirty years, destroyed many shrimp breeding habitats. It concluded that filling activities must be stopped, and oil spills and sewage discharge must be regulated.[32]

Along the Red Sea coastline an impact of great concern is the destruction of mangrove stands through grazing, and harvesting for stock feed and fire wood.[33] Urban growth can add to the stress on mangrove swamps, as is the case in Jeddah, where the construction of the southern Corniche disturbed the only surviving mangrove swamp near the city. One of the byproducts of this urban growth is the overflow of sewage treatment plants, which has led to the discharge of partially treated and raw sewage to the sea. Desalination plants along the coast add to the stress by destroying coral reefs and contaminating the water.

Dredging and land filling activities are widespread in coastal areas and probably constitute one of the major environmental impacts in the Arabian Gulf and the Red Sea. Dredge and fill activities can disrupt and bury benthic and wetland communities, increase turbidity, resuspend pollutants trapped in sediments, alter current flow pattern, and reduce the ability of mollusks to attach to substrates.[34] A

classic example is the construction of Jeddah corniche, where the entire reef flat and much of the reef face were destroyed.[35]

4.3 Political Culture and System

Although the political system and culture in Saudi Arabia is similar to other monarchical regimes in the area, the country has a distinctive political culture due to the great diversity of its population and the large area it covers. This section will introduce the Saudi political system and culture in order to understand its possible consequences on environmental policies. This introduction will discuss the Saudi Constitution, the Consultative Council "*Majlis al-Shura*", the government structure, in addition to the decision making process.

4.3.1 Historical Background

The Kingdom of Saudi Arabia was established in 1932, when the late King Abdulaziz managed after a long series of wars to gain control over large areas of the Arabian Peninsula. At the time the only organized administrative structure existed in the western part of the country (the Hashimite State of Hejaz) which was established by the late Shareef Hussain in 1916. Compared with the rest of the regions, it included a relatively developed political structure, including a political party (National Hejazi Party) which was represented in the last government of Shareef Ali in 1923.

The new Saudi state utilised some of this exiting system. The early years were characterized by a simple administrative structure, however as Al-Mogren (1992) suggested "King Abdulaziz, recognized the need for a centralized governmental body that could deal directly with national affairs."[36] This concept of

centralization of power will dominate the Saudi political system in the future. A major justification of the absolute concentration of power is the lack of unity within the new state, and the strong tribal power. The government sought to diminish the tribal power by seizing all authority. This included the tribal land ownership which lead to the decline of *Hema* system in many areas. Several ministries were functioning in the early stages, and in 1953 the Council of Ministers was established. Al-Mogren (1992) commented that "Governmental agencies and ministries had been functioning as highly centralized administrative departments since the 1930's."[37] By 1963 the number of ministries grew to 14, and in 1975 with a wide restructuring of the government and increasing revenues, the number of ministries rose to 20. [38]

The shift from a tribal society to the existing form of government in Saudi Arabia was faced with some difficulties including military conflict with militant groups in 1929. However, the political culture in the country is strongly influenced by the tribal traditions, including the dominant ruling figure and concentration of power within one group, which became the Royal family. The Saudi Royal family is a classical example of monarchical regimes in the Arabian Peninsula, where the king is the dominant power and close relatives occupy most influential cabinet positions.

4.3.2 The Saudi Constitution

Until recently the Kingdom of Saudi Arabia had no clear written constitution, with the exception of some laws which describe government structure and the duties of ministries. In 1992 King Fahd announced a new political reform in which a written constitution was introduced under the title "Basic Law of Government". The law consisted of nine chapters, each with several articles. However, the new Basic Law didn't change much of the old system. Islamic Shari'ah was confirmed as the

main source of law. The brief discussion of the Basic Law in this section will be limited to issues affecting the basic authority of the state, decision making process, and environmental issues.

Chapter two/ Article seven of the Basic law indicates that the "Government of Saudi Arabia derives power from the Qur'an and the Prophet's tradition." [39] Paradoxically, Chapter two/ Article five suggests that "The system of government of the Kingdom of Saudi Arabia is monarchy, and the rule passes to the sons of the founding King, and their children's children." Chapter four which dealts with economic principles states in Article fourteen that:

> "All God's bestowed wealth, be it under the ground, on the surface or in national territorial waters, in the land or maritime domains under the state's control, are the property of the state as defined by law. The law defines means of exploiting, protecting and developing such wealth in the interest of the state, its security and economy."

This places all responsibility of environmental degradation which might result from oil and mineral exploitation on the government. Article fifteen adds that "No privilege to be granted and no public resource is to be exploited without a law." On the other hand, state duties, as outlined in Chapter five, specify in Article thirty two that "The state works for the preservation, protection and improvement of the environment, and for the prevention of pollution." This article provides the constitutional duties of the government for sound and efficient national environmental policy.

The public involvement in the decision making process was mentioned in Chapter two /Article eight which states that the "Government in the Kingdom of Saudi Arabia is based on the premise of justice, consultation (Arabic: *Shura*) and

equality in accordance with the Islamic Shari'ah." This principal is elaborated in Chapter six/ Article sixty eight which suggests that "A Consultative Council is to be created." This council (*Majles Al- Shura*)will be discussed in more detail later in this chapter. Chapter five/ Article forty three suggests another form of public participation in the political life, which should theoretically influence the decision making process, by stating that "The King's court and that of the Crown Prince shall be open to all citizens and to anyone who has a complaint or a plea against an injustice. Every individual shall have a right to address the public authority in all matters affecting him." The general authorities of the state are outlined in Chapter six,/Article forty four, which explains the scope of this authority, and confirms the absolute authority of the King by stating that "The authority of the state consists of the following: the judicial authority; the executive authority; and the regulatory authority. These authorities co-operate with each other in the performance of their duties, in accordance with this and other laws. The King shall be the point of reference for all these authorities." (See Fig. 4.6 Constitutional Principles in Saudi Arabia)

The independence of the judicial body is stated in Article forty six which suggests that "The judiciary is an independent authority. There is no control over judges in the dispensation of their judgment except in the case of the Islamic Shari'ah." On the other hand Article fifty states that "The King, or whoever deputises for him, is responsible for the implementation of judicial rulings." Article fifty one and fifty two adds that:

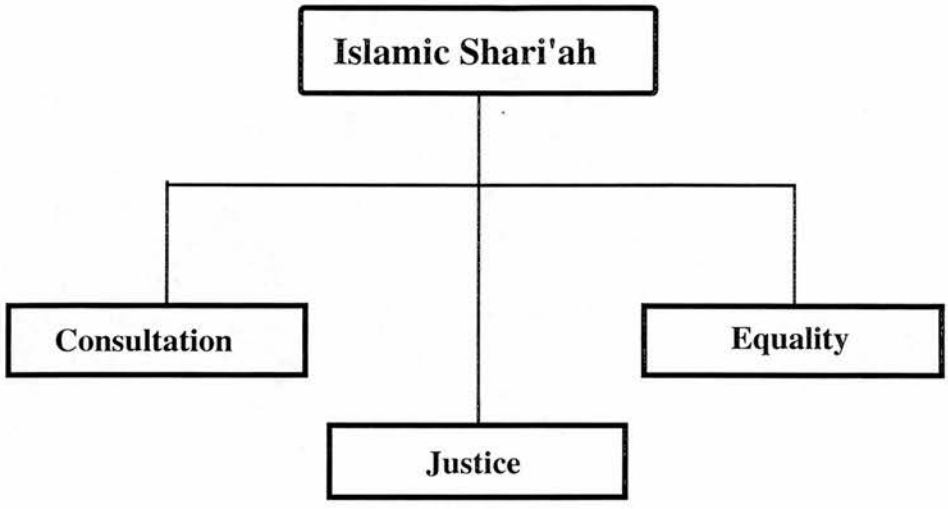


Fig. 4.6 Constitutional Principles in Saudi Arabia

Source: Compiled by the author based on articals eight & fourty of "Basic Law of Governmnet"

> "The authorities establish the formation of the Higher Council of Justice and its prerogatives; they also establish the seniority of the courts and their prerogatives. The appointment of judges and the termination of their duties is carried out by Royal decree by a proposal from the Higher Council of Justice in accordance with the provisions of the law."

However, the King, who as mentioned in Chapter six/Article forty four is the point of reference for all authorities, theoretically can overrule any verdict. He also acts as the final court of appeal and has the power of pardon.[40] In addition to Article forty four, Article fifty six outlines the general government structure.

> "The King is the head of the Council of Ministers, he is assisted in carrying out his duties by members of the Council of Ministers ... The Council of Ministers establishes the prerogatives of the Council regarding internal and external affairs ... It also establishes requirements to be fulfilled by ministers, their prerogatives, the manner of their questioning and all issues concerning them."

(See Fig. 4.7 Constitutional Relationship in Saudi Arabia)

In general the Saudi constitution gives the King absolute power and suggests limited public involvement in the political life and the decision making process. This limitation which is part of the prevailing political culture strongly influences public participation in the debate over environmental issues, and places the whole responsibility on the government, represented by its ministries and agencies. Public participation in environmental decision making and environmental awareness in Saudi Arabia will be discussed in the next chapters.

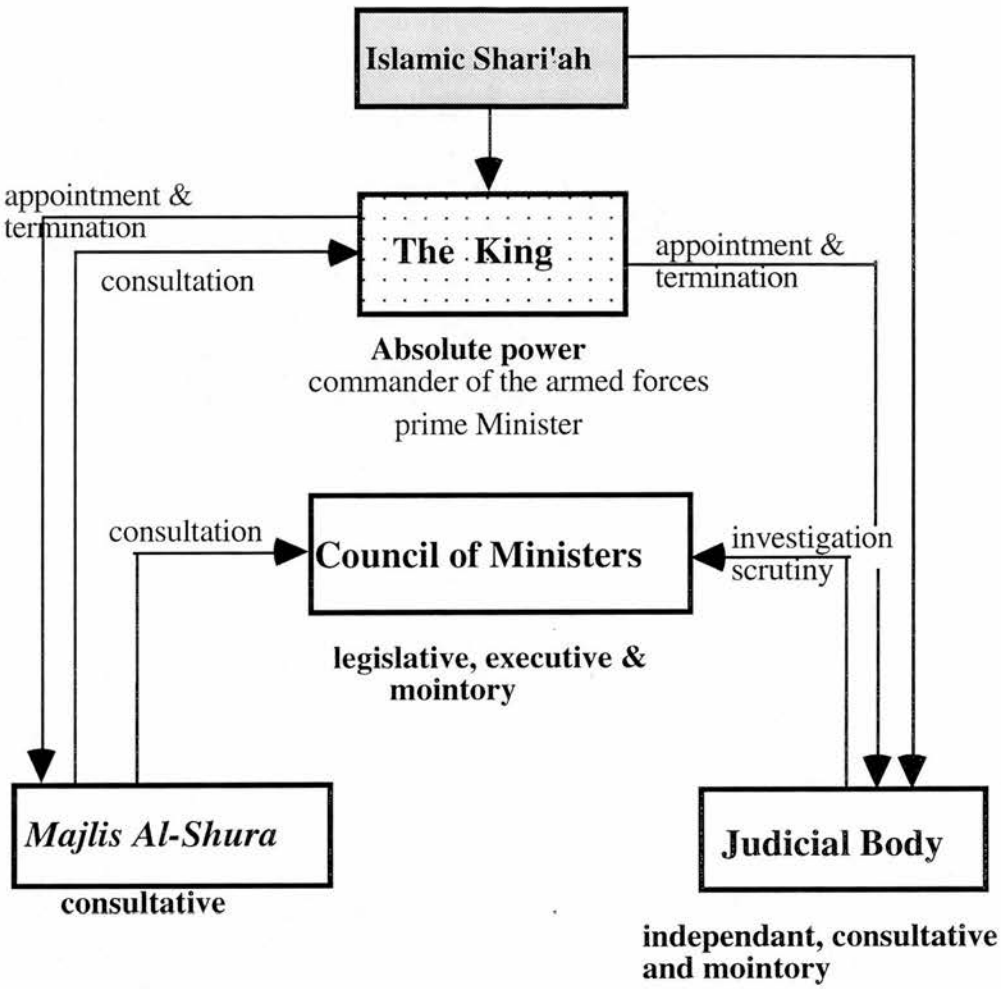


Fig. 4.7 Constitutional Relationship in Saudi Arabia

Source: Compiled by the author

4.3.3 Government Structure

The government in Saudi Arabia consists of the King, as the head of the state, the supreme commander of the armed forces, and the Prime Minister; the Council of Ministers; the ministries and independent agencies; the judicial bodies; and most recently the Consultative Council "*Majlis Al-Shura*". Special councils and committees are responsible for setting general policies, and monitoring the implementation of government policies, such as the Higher Council of Education; the Ministerial Committee for the Environment (MCE); and recently the High Council for Islamic Affairs. (See Fig. 4.8 for the Saudi Government Structure)

As discussed earlier the constitution grants the King absolute power as the point of reference for all authorities in the country. This authority is significantly apparent by the role of the Council of Ministers in which he is the chairman. The Council of Ministries is the most influential body in the Saudi government and combines the functions of state legislative, executive and administrative authorities, in all major affairs. Al-Awaji (1971) described the council as the sole and head of major state affairs: economic, social, political, and administrative. Moreover, it has the exclusive authority to formulate state policy regarding both domestic and foreign affairs, to legislate laws, and to initiate measures and policies that relate to all public affairs, as well as to control and insure their execution. [41] The Council consists of the Prime Minister (the King), the Deputy Prime Minster (the Crown prince) and the second deputy Prime Minister (presently the Minister of Defense), the head of the various ministries, together with ministers of state and ministers without Portfolio, the Royal advisers and the head of a few important bureaus. The Expert Branch (*Shubat Al-Kubaraa*) within the Council of Ministers plays an important role in providing the council with legal advice and help in drafting laws and regulations.

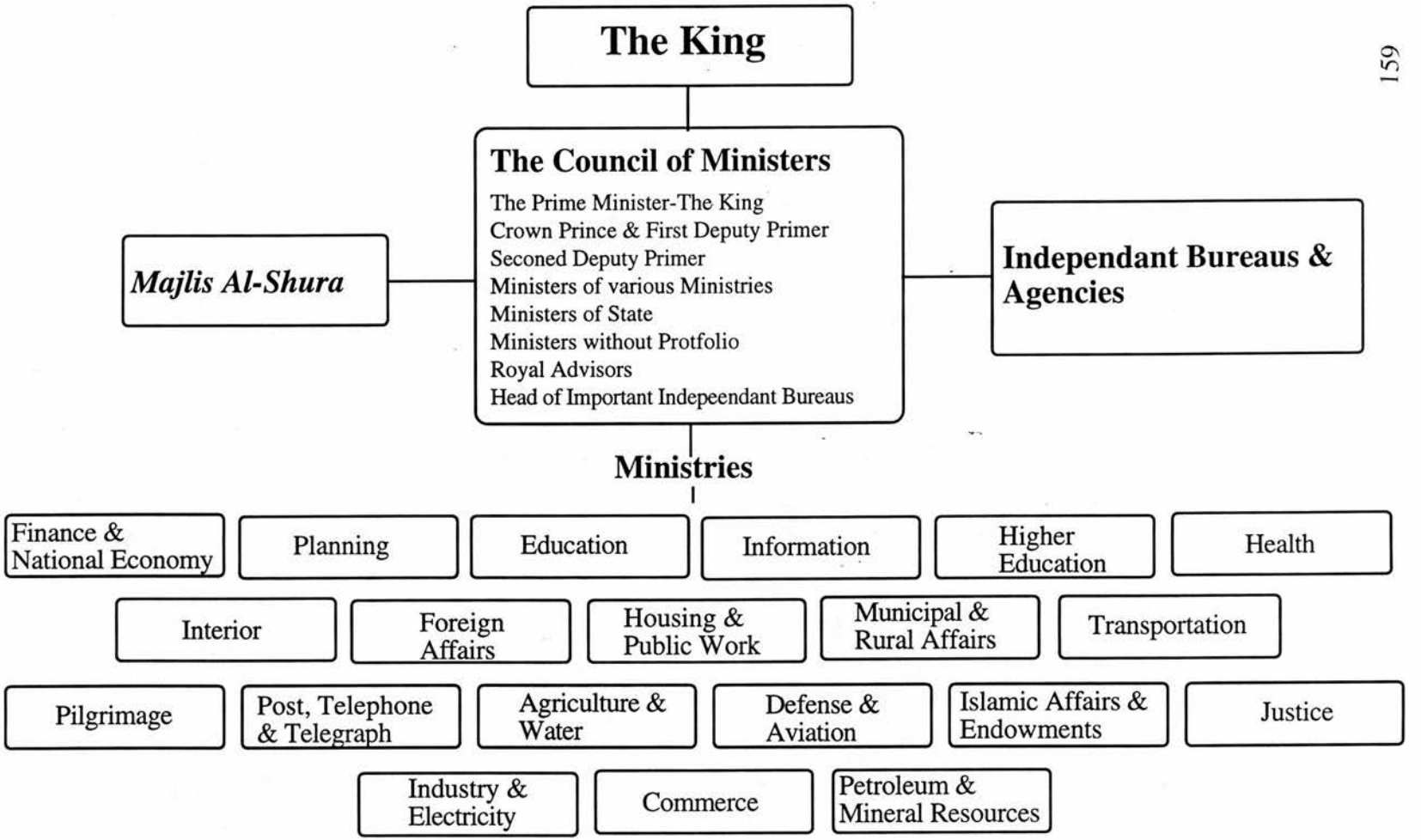


Figure 4.8 The Saudi Government Structure 1997

Source: Compiled by the author based on A. Dahlan (ed), **Politics, Administration & Development In Saudi Arabia.** 1990. p.76.

The Council administers most of the sixty or more autonomous agencies.[42] The absolute authority of the King gives him the mandate to name all ministers, senior officials and governors of provinces, in addition to the selection of all military officers above the rank of lieutenant colonel.[43] In addition to the Council of Ministers individual ministries also act as executive branches of the government. They also play the role of regulatory authority in implementing law and regulations. (See Fig. 4.8 for the Saudi Government Structure)

The Judicial authority in Saudi Arabia is represented by Ministry of Justice, the Supreme Judicial Council, the Ifta council, the Board of Grievances, the Council of Supreme Ulama (Muslim Scholars), and the Commission of Investigation and Prosecution. In addition there are several committees that are authorized to adjudicate over various kinds of disputes.[44]

The Ministry of Justice is the highest judicial body in the country and is responsible of monitoring and enforcing all laws and regulations, it is also responsible for all courts in the Kingdom. The Minister has the power to authorize the lower courts to change their seats or to hear cases that would not ordinarily come within their jurisdiction. In addition, The Minister's legal staff is responsible for assisting the courts in establishing general rules of law. The Minister also has supervisory powers over the Shari'ah courts and judiciary. [45] The supreme Judicial Council is related to the Shari'ah judicial system and considered the highest authority in this system. It is composed of ten members and a chairman who holds the rank of minister. Its functions are administrative, consultative, and judicial. The main jurisdiction of the council is to review all sentences of death, and to study issues referred by the king, and to express opinions on judicial matters when requested by

the Minister of Justice.[46] The Board of Grievances is the most important body outside the Shari'ah court system. It is ordinarily the only tribunal having subject-matter jurisdiction over cases where the Saudi Government is the defendant. It is an independent Board with a minister ranked chairman.[47] Lerrick and Mian (1982) explained that the independence of the Board "was made subject to the Council of Ministers, and that the Chairman of the Board is required to make detailed semiannual reports to the President of the Council of Ministers (the King)."[48] Theoretically the board might be the only venue for legal action against the Government in case of any environmental mismanagement in the Kingdom. However, in reality no known precedent existed in the past. The Board also act as the final official court of appeal in most cases, including environmental law. The mandate of the Board suggested that it deal with any appeal claims against the executive branch of the government, the examples given included the enforcement of wild animals and birds hunting law No. M/17 of 1978, the forestry and Rangelands law No. M/22 of 1978, and the water resources conservation law No. M/34 of 1980. For up dated review of judicial authority in Saudi Arabia see Al-Zahrani (1995). Discussion of environmental laws in Saudi Arabia is given in the next Chapters.

Several autonomous bureaus are incorporated into the structure of the Saudi government. These are directly linked to the King through the presidency of the Council of Ministers. At the present time there are twelve bureaus. Further more, there are more than thirty public corporations which are linked to the various ministries in the government structure. These corporations enjoy a greater latitude in day-to-day operations than other government agencies.[49] One of the important environmental agencies, the National Commission for Wildlife Conservation and

Development (NCWCD) enjoys the position of independent government agency with a direct link to the Council of Ministers.

Several Ministers and Agencies within the Saudi Government are involved with environmental issues at policy, implementation, or monitoring level. A classification of governmental bodies involved in environmental policies will be given in the next chapter. The Ministerial Committee for the Environment (MCE), is the highest body responsible for drawing up the general national environmental policy of the country. All related Ministries and environmental agencies are represented in this committee. A detailed discussion and assessment of the structure, scope of authority, and conflict between government agencies dealing with environmental issues will be covered in Chapters five and six.

4.3.4 The Consultative Council - *Majlis Al-Shura*

The traditional practice of consensus and consultation which was exercised through public meetings (*Majlis*) with the King and head of provinces lost its effectiveness in the last decade. However, it never had significant influence, some thought, on the decision making process. The MERI Report suggested that :

> "The King's authority is bounded by four aspects that are varied in their extent and through which clusters of powerful interest groups channel their influence on the policy making process. First and most important is the Shari'ah law, which is the basic element for the government's operation. The second and third are the twin principles of consensus and consultation. And finally, the constitution of the Majlis, which assure the accessibility of the King to the public and exemplifies what has sometimes been described by others as desert democracy."[50]

The announcement of the Consultative Council came with the new constitution in March 1992, and the list of the sixty members was announced in 1993, (the number of members was raised to ninety in 1997). The Council functions

as a consultative body to the government without any legislative authority. All members are selected and appointed by the King, and he has the power to dismiss them.

The role of the traditional constitution of *Majlis* (open meeting) as a proper venue to express public concern is debatable. Usually it is used for personal complaints and demands, rather than a channel to express public concern, and participation in the decision making process. A survey by Al-Saud (1988) in the principality of Riyadh suggested that 50% of the attendees of the Majlis came for personal problems, and 20% for financial reasons. The same survey indicated that the vast majority, 85%, attended the Majlis more than once, 10% once, and only 5% for the first time.[51] This indicates that most of the attendees are regular customers of the Majlis. In Saudi society it is likely that many of those people are there for social contact and prestige rather than to advise the prince; to express public concern; or to be involved in any decision making process. The complexity of modern life has diminished the minor role of such access. However, the existence of such a venue was the only venue for the public to express their concern. Prince Salman said "Bedouin society and country people still attend the Majlis for simple problems. So the more people become educated, the less they use the Majlis."[52]

The establishment of the consultative council should in theory revitalize the original traditional role of the Majlis, where the people can question government officials and make them accountable for policies and programmes. However, when studying the power granted to the council, and considering the prevailing political culture, it is difficult to conclude that this Council will be influential in the political life of Saudi Arabia and the way the government functions. On the other hand, as

the Guardian commented "In a society accustomed to rulers who move slowly, many will be ready to give this historic break-through the benefit of the doubt for the time being. For there is also a widespread feeling that too much democracy could be dangerous."[53]

The composition of the Council members suggest that the King has aimed to represent all ideologies and professional backgrounds within the council. In his speech the King expressed that he was "always pleased to know the citizens views and benefit from their experience in all fields. I feel great pride in the high levels in differant sciences and art that Saudi citizens have achieved, in comparison to what the situation was only a few years ago."[54] The role of the Council as an authoritative body was spelled out in its law. However, the mechanism of functioning is not clear since the Council of Ministers dominates the decision making process in the country. The Council law indicated that the Majlis is *an advisory body*, which has the right to express its opinion on general policies of the state *referred to* it by the President of the Council of Ministers (the King). The Majlis may also discuss the economy of the Kingdom in *a general way,* and its social development; it has the duty to study the laws submitted to it, and suggest alterations, amendments, and additions or deletions; equally it will study international treaties or agreements entered into by the Kingdom; and it will interpret laws already passed.[55]

The appointed Chairman Sheik Mohammed bin Jobair suggested that "if the Council found any wrong doing or malfunctioning by ministers, it *could* report that to the King." The question of to what extent the King will consider the Council's Advice is not clear. The speaker bin Jobair explained by saying "I have read most of

what the Islamic scholars have written on this issue, and as a result I subscribe to the view which says that *Shura is advisory, not obligatory*." [56]

It is assumed that the basic power of the Council will rest on its power to summon ministers and to question them on their policies, and its duty to refer back to the King legislation of which it disapproves. According to the Speaker, the Council will become a partner to the Council of Ministers in advising the King. He was to say "When a law is proposed, we debate it, and report on it to the King, who passes it to the Council of Ministers. If the two councils agree on it, then it is confirmed, and becomes the law. But if the two councils disagree, then the King has to decide."[57] Bulloch (1993) commented that "Given the balance the King has arranged in the composition of the Council, no Ruler would seek to push through laws which had been rejected by the Majlis, as such legislation would clearly be opposed by the country at large."[58] Considering the political culture in Saudi Arabia, it is not assumed that the Council will reject any proposed legislation. However, the members might suggest some amendments.

The establishment of the Council might prove to be a constructive step to incorporate public concern in the debate of laws and legislation, as well as to make government officials publicly accountable.[59] It is early to judge the success of the new Council. However, the current system lacks the mechanism to involve public concern in the legislative and decision making process, which might be included in further political reform. The public and the *Majlis* role in environmental legislation and decision making will be discussed in the next Chapters.

4.3.5 Political Culture

The Constitution; the political system; and culture in Saudi Arabia allow the King absolute authority. This authority increased with the diminished power of tribal and religious leaders in the last four decades. The famous slogan "*Al-Shyok abkhas*" which literally means "the King knows better", can sum up the traditional political culture in Saudi Arabia. This phrase was used widely during King Abdulaziz's time and it expresses the ideology and attitude of the King's companions and advisors in addition to some public opinion, where people looked to the King as a wise man and opposing his ideas was considered impolite and not acceptable. Nowadays, there are signs of change in the traditional political culture. This change can be attributed to the increased level of education, wealth and political maturity within a large segment of the Saudi society. However, the recent decrease in living standards and unstable economic conditions is also slowly adding to the recipe for change in Saudi Arabia. This change in the political culture indicates the public need for further involvement in the decision making process. Most significant is the accountability of government officials in front of the public and the ability to scrutinize their policies and work .

It is not clear how the government will react in the future to the changing political culture. However, with the rapid changes within society it is expected that the establishment of the Consultative Council may be the first step to accommodate public concern. This action if allowed to function freely might prove to be for the benefit of the governmnet. It should be noted that the support of religious figures for the government is still intact.[60] (See Fig. 4.9 Political Culture in Saudi Arabia)

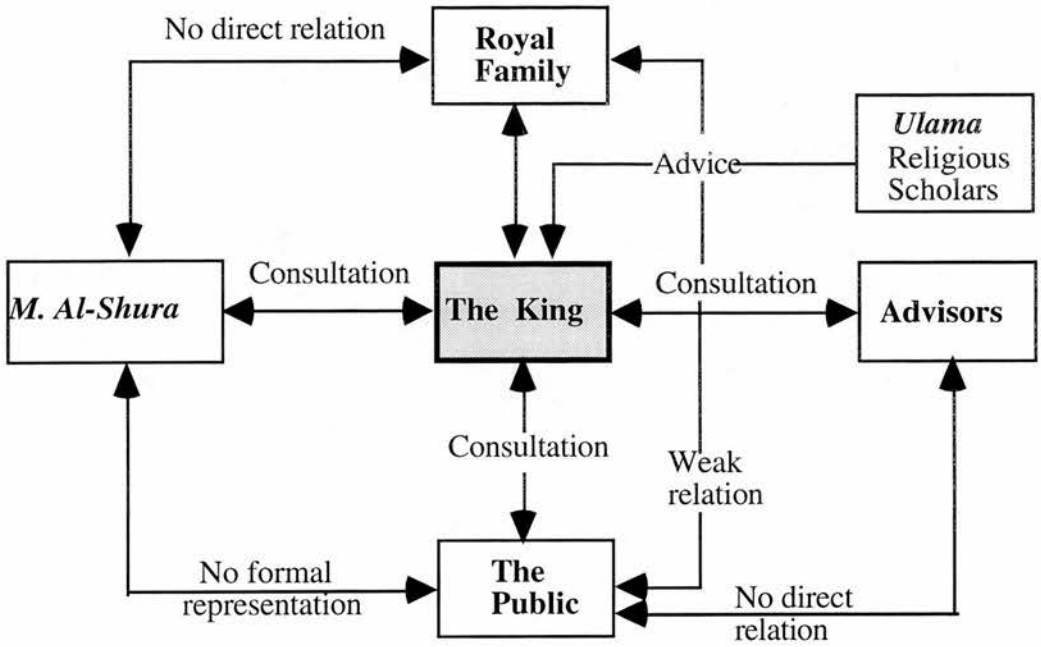


Figure. 4.9 Political Culture in Saudi Arabia

Source: Compiled by the author

4.3.6 Decision Making Process

The general goals and objectives of the Kingdom's development policies are established and out lined by the Five Year Development Plans, which were approved for the first time in 1969 by the Council of Ministers. These plans are prepared by the Ministry of Planning and cover all areas of development policies. Al-Mobarak (1993) explained that the Ministry of Planning is primarily responsible for the creation and coordination of national plans, and in conjunction with various groups, develops development objectives and tactics to achieve the general goals.[61] The basic data and proposals are prepared by the individual ministries and agencies, which are then evaluated and discussed with the Ministry of Planning. The role of the ministry administrators can be important in formalizing development policies. Tawati (1976) suggested that "administrators are involved directly in the policy making process. They recommend programmes to the Council of Ministers. They offer expert advice to both the King and the Council. In fact, all members of the Council are administrators; each in charge of a certain ministry."[62] The process of drafting development plans is coordinated with the Ministry of Finance for budget consideration, and the draft plan is submitted to the Council of Ministries for discussion and approval. In the Council meetings the King has the decisive role in any amendment or resolving conflict between ministries. After approving the plan, the burden lies on each ministry and agency to develop specific policies and programmes to achieve the general goals set out in the Development Plan.

Al-Mobarak (1993) noted that the Ministry of Planning has little role in monitoring the development and implementation of these plans. He explained that "Individual Ministries supply projects and goals status reports and updates to the Ministry of Planning which in turn makes its assessment ... The element of planning,

budgeting and follow-up are often faced with serious shortages of staff, role ambiguity, and lack of high level support, and weak coordination."[63] Although the process is quite rational and focused, there is no real mechanism to follow-up the general policies and plans drawn up by the Ministry of Planning, in other words it is up to each ministry to satisfy their goals. Considering the lack of public accountability and centralized political process, the Saudi decision making process has never been subjected to scrutiny and public judgment. This also goes for the development plans which have no means of including public concern in the process of proposing a five year plan with high financial expenditure. The changing political culture which included the establishment of the Consultative Council might slightly influence the process in the future. The ideological argument for any change in the process was explained by the Vice President of *Majlis Al- Shura* Abdullah Naseef where he said it was an Islamic rule to take decisions by consultation; collective decisions were always better than those taken by individuals. Equally the higher the caliber of those consulting together and taking the decision, the better those decisions were likely to be.[64]

4.4 Traditional Environmental Ethics and Practices

Since pre-Islamic time the Arabian peninsula was influenced by tribal laws and norms. These laws included traditional conservation practices, mainly to sustain the use of natural resources such as pasture land, wood, and water sources. These traditional institutions were maintained by each tribe and trespass was considered a serious offense. In many cases tribal wars started due to entry of tribal reserves. The constitution of traditional tribal reserves such as *Hemas* were incorporated in Islamic law. Prophet Mohammed, upon whom be blessing and peace, approved the system and himself declared several reserves. Grainger & Llewellyn (1994) noted

that Islamic law has sanctioned and redirected certain traditional regulatory systems, including grazing reserves, and caused them to become entrenched in the culture and value system of many Islamic countries.[65] Tribal and village reserves can differ according to physiographic and political factors. In the northern parts of the Arabian peninsula emphasis was given for seasonal grazing grounds and water sources, the widely used name is *Derah*. While in the more village community of the central region Najd, reserves are associated with village agriculture and reserves *Hotat* are used mainly for camels and farming animals. Similar systems exist in north Africa where they are called *ghidal* or *zenakah*. They also exist in Islamic areas in sub Sahara regions including Nigeria and Bornu where they called *mahram*.[66] The Hejaz region maintained the most comprehensive reserve system in Saudi Arabia, mainly along the mountain chain. The widely used name there is *Hema*. It should be noted that although most *Hemas* can be found in the mountainous region, several *Hemas* exist in Tehamah plain.

4.5.1 The Hema System

The word ***Hema*** (plural *Ahmeyh*) is derived from the Arabic verb *Hama, Yhmee*, meaning to protect, *Hema* means "the protected area". The functional definition of the word can be summarized as a tribal or village protected area for the sustainable use of natural resources, such as range land, forest and shrubs or water resources. The system regulates the type of use; intensity; time of utilization of the natural resource; and the law is regulated and maintained by the tribal or village authorities. Eighmy and Ghanem (1982) defined the institution of Hema as a set of regulations controlling the extent and intensity of utilization of resources. [67] Their study noted that regulation of the use of Hema is closely integrated in the tribal tradition, where no permanent guards or watchmen are used, with the exception of

private Hemas, and no walls define the territory. [68] Other sources contradict the findings of this study. Al-Kahtany (1990) suggested that in the case of village Hemas a guard is employed by the village to watch the Hema, in other cases all male tribesmen contribute to the enforcing of the law. He gave the example of Hema Jabal Al-Abd of Al-Anag village in Al-Baha region.[69] The suggestion of nonexistance of walled Hemas is not accurate, as few Hemas are marked by walls. However, these walls are small and do not provide a complete physical barrier.[70] Violation of tribal laws can be reported by any member of the tribe as long as he is a credible witness, and traditional tribal customs regulate the punishment of any violation. Eighmy and Ghanem (1982) suggested that a typical punishment is to slaughter one or more of the trespassing sheep or goats.[71] However, it should be assumed that this punishment is associated with the study area they covered, tribal norms could differ in the northern and central areas of the Arabian peninsula. The same study noticed that the current punishment tends to be less severe, and it involves the urban/ national system of police and religious judges and fines and warnings are not common.[72] This can be attributed to the diminished tribal power and the deterioration of the rural agriculture communities in the Hejaz mountain, as a result of the rapid social and economic changes the country experienced since the 1960's . It should also be noted that the government adopted a detriblisation policy as part of its national political agenda. This policy aimed to create a national structure rather than tribal communities, which dominated the political life in the Arabian peninsula.

Draz (1969) who began a series of studies of the system in 1965, described the system as one of the oldest known forms of range and resource conservation in the world.[73] He classified Hemas functionally into three types, grazing, beekeeping, and tree cutting. The subcategories of the three types are:[74]

A- Prohibition of Grazing. Animal grazing is prohibited. Cutting of grasses is, however, permissible during specified period of droughts. The head of the tribe grants special privileges for a limited number of needy people to use the reserve range. A specified number of each family are allowed to cut mature grass during the season, either for storage or for direct use.

B- Limited Grazing. Grazing and/or cutting is permitted, but restricted to certain seasons of the year, as in Hema Elazahra and Hema Hameed around Belgurashi in Saudi Arabia.

C- Specified Grazing. Grazing is permitted the year round. The kind and number of animals permitted for grazing are specified. Most of the Hemas around Taif are in this category, and grazing is restricted to cattle and donkeys. There is, however, no restriction on any cutting after the grass matures.

D- Beekeeping. The reserve is kept for beekeeping. There is a limited number of these Hemas and grazing restrictions are relaxed after the flowering seasons. (A good example of this category is Hema Al-Fiqrah near Madenah and Hema Hijra in Bani malik).

E- Forest. The reserve aims to protect forest trees such as juniper and acacia. These Hemas are usually the common property of a village or tribe. Cutting of trees is prohibited except in great emergencies or need, such as rebuilding a house destroyed by calamity or for building a mosque or school. Sometimes the wood is sold to raise funds for the benefit of the village or tribe.

Eighmy and Ghanem (1982) added that Type (C) Hemas where sheep and goats are prohibited in preference to cattle, donkeys, and camels is numerically the most important. In addition villages reported that grass cut in type (A) is usually fed to cattle.[75] The same study noted that Hemas are controlled by social units ranging from tribal section to individual. It suggested the following scale classification of Hemas in the Hejaz region:[76]

1- Section Hema: Most Hemas are used and controlled by several (up to 10) small villages (50 households) of the same tribal section.

2- Village Hema: use and control is the sole prerogative of a single village.

3- Individual Hema: Where some areas are reserved by individuals as private pastures. These are usually much smaller than section or village Hemas.

There are no accurate estimates of the number of Hemas in Saudi Arabia. However, the first study by Draz (1965) suggested that 30 Hemas existed within 40 km of Taif, and the general estimate was 3000 for the whole country. The Eighmy and Ghanem survey in 1980 suggested that the number of Hemas still in use, in the mountains regions between Taif and Baha were around 200, and the number has been much larger as little as 20 years ago.[77] Grainger and Ganadilly (1986) noticed that a Hema is associated with almost every village in the Baha region. This was part of a study by MEPA in the mid 1980's. This study found that Hemas vary in area from 10 hectares to over 1,000 hectares, with an average of 250 hectares. The largest Hemas are to be found away from more densely settled areas around Al-Baha.[78] A Hema distribution map in Al-Baha region was composed by Al-Gilani, Shelly and Wali (1986) utilizing data supplied by MEPA. This map shows the physiographic distribution of Hemas and its association with the dense agriculture communities along the escarpment, and the dispersed existence to the east where tribal settlement tends to be more scattered and in some cases nomadic.[79]

The rapid change within the agricultural community in the Hejaz region, and the introduction of modern machinery in the last thirty years led to the decline of demand for oxen and donkeys in the area. Consequently, many Hemas were abandoned and regulations were lessened, which allowed shepherds to utilize the

rich and diverse vegetation cover in the protected zones. The diminished tribal and community power added to new circumstances. However, it is worth mentioning that some villages and tribes in Al-Hejaz maintained their Hemas as part of their tribal identity and heritage. The decline in using draft animals in the traditional Hejaz agriculture was explained by Eighmy and Ghanem (1982) :

> "grazing reserves almost prohibited sheep and goats in favour of cattle and donkeys ... cattle were important to traditional Hejaz villages in providing oxen to plow the terraces and as a source of milk ... the decline of traditional agriculture, abandonment of field terraces, and the rapid mechanization of Hejaz agriculture reduced demand for oxen ... restriction on sheep and goats grazing were relaxed."[80]

Grainger and Ganadilly (1986) noticed that nowadays in times of poor rainfall, designated portions may be cut, under the supervision of the tribe chief (*Sheik*) with each stockkeeper cutting what is required for his stock. Rational cutting maintained the quality of Hema grasses. Hema Shamrokh was cut twice in 1984, though in good years the Hema may not be cut at all. [81] In other parts of the Hejaz many Hemas are completely abandoned, without any tribal or village protection. When Eighmy and Ghanem in 1980 surveyed the Hemas located by Draz in 1965, they found that all of them were no longer protected.

The decline of the system is still continuing nowadays, and there is no evidence that the government is making any real effort to revitalize this traditional conservation practice. MEPA conducted a detailed survey of the system and located most Hemas in the Hejaz area. However, most MEPA research and survey work never resulted in concrete environmental programmes. The activities of MEPA and other environmental agencies dealing with Hemas will be discussed later in Chapters five and six.

4.6 Summary

Environmental conditions in Saudi Arabia are following the trend of most developing countries. It also shares the problem of industrial pollution and toxic waste management with developed nations. The intensive oil production industry and related activities have resulted in severe environmental degradation. The discussion in this chapter introduced the current environmental stress in Saudi Arabia which could increase in the future if no decisive action is taken. The main problem with the Saudi environmental dilemma from the constitutional and political spectrum is the lack of a culture of participation which can place some pressure on the government to address the increasing problems away from the classical political attitude. The mixture of political culture, distribution of power, and constitutional rights, produce limited venues to inform the public about the seriousness of the environmental condition. The lack of access to environmental data where it exists, lack of media coverage, and the limited possibilities of public participation in the political process can produce ignorance and reduce awareness within the mass public.

The central decision making process provides limited venues for public participation in the political debate, and the government carry the burden of maintaining the environment in a healthy condition. The example of the *Hema* system proves that tribal and local norms can be successful in maintaining natural resources; this needs to be incorporated into national policies and laws. How successful is the government in satisfying its constitutional duties towards the environment will be the topic of the next two chapters which will assess the national environmental policies and the role of government agencies in drafting and implementing environmental policies and laws.

[1] US. Government Printing Office and Richard F. Nyrop, **Saudi Arabia A Country Study.** Washington, DC. : USGPO, 1984. pp.64-68.

[2] The most recent volcanic activity in Saudi Arabia occurred in the thirteenth century near Madenah. Earth quake activity occurs frequently along the Red Sea, though on a small magnitude. To the south in Yeman volcanic activity was recorded as recently as 1985 accompanying a wide spread earth quake.

[3] For detailed information of the Arabian peninsula geology see Chpman, R.W. General Information on the Arabian Peninsula. 1.1 Geology. In **Quaternary Period in Saudi Arabia.** Saad Al- Sayari & J. Zolt New York: Spring Verlag, 1978.

[4] G. Child and J. Grainger, **A System Plan for Protected Areas in Saudi Arabia.** Saudi Arabia: NCWCD, 1990. pp. 10-11.

[5] Ibid., p. 12.

[6] Ibid., pp. 13-20.

[7] Child and Grainger (1990) used the name Asir to describe a large area from the southern border to the north of Makkah. This contradict the historic definition of the Hejaz. Asir is a more recent name for the mountainous region south of the Hejaz, and it was derived from the name of one of the tribes in the area. The names given between brackets are a suggestion to modify Child and Grainger terminology.

[8] SRI International, **The State Of The Environment, Kingdom of Saudi Arabia.** Jeddah, Saudi Arabia: MEPA, 1984. p. ES-5.

[9] Ibid., p. ES-5.

[10] Omar Sabbak, "Distribution of Ozone in the Jiddah Atmosphere" in **Environmental Management and Health.** Vol. 5. No. 2. 1994. p. 20.

[11] Ibid., p. 20.

[12] SRI, 1984. p. ES-5.

[13] Ibid., p. IV-7.

[14] MCE, 1992. p. 71.

[15] E. Waller, "Conservation and Land Reclamation on the Urban Fringe with Special Reference to the Jeddah Area, Saudi Arabia." in **Journal of King Abdulaziz University - Engineering Sciences.** Jeddah, Saudi Arabia: KAU, Vol. 1. 1989. p. 66.

[16] SRI International, 1984, p. ES-7. and p. IV-59.

[17] MEPA, **State of the Environment in Saudi Arabia -1992.** (SoE-92), Unpublished, MEPA. 1992. p. 28.

[18] Ibid., p. 29.

[19] Ibid., p. 29.

[20] G. Child and J. Grainger, 1990. pp. 51-53.

[21] Ibid., p.55.

[22] S. Alshodouki, "Wood Cutting" in **Proceeding of Workshop I on the Ecological Imperatives for Sustainable Development in the Kingdom of Saudi Arabia.** Riyadh, Saudi Arabia: NCWCD, MEPA, and MAW, 1990. No page number.

[23] G. Child and J. Grainger, 1990. pp. 126-127.

[24] Ibid., p.127.

[25] Ibid., p. 128.

[26] Jane E. Williamson, "The Status of Large Mammals in The Kingdom of Saudi Arabia" in **Proceeding of workshop I on the Ecological Imperatives for Sustainable Development in the Kingdom of Saudi Arabia.** Riyadh, Saudi Arabia: NCWCD, MEPA, and MAW, 1990. No page number.

[27] G. Child and J. Grainger, 1990. pp. 140-141.

[28] Ibid., p.140.

[29] P. Symens, "The Human Explotation of Migrating Birds in Saudi Arabia." in **Proceeding of workshop I on the Ecological Imperatives for Sustainable Development in the Kingdom of Saudi Arabia.** Riyadh, Saudi Arabia: NCWCD, MEPA, and MAW1990. No page number.

[30] Ibid.,

[31] Antony Chiffings and Abdulwahab Dakkak "The status of Marine and Coastal Environment in The Kingdom of Saudi Arabia" in **Proceeding of workshop I on the Ecological Imperatives for Sustainable Development in the Kingdom of Saudi Arabia.** Riyadh, Saudi Arabia: NCWCD, MEPA, and MAW, 1990.

[32] Asharq Al-awsat, "A sharp decline in shrimp fishing due to oil pollution and filling activities." in **Asharg Al-Awsat News Paper**(in Arabic) No. 5825, Wednesday 9/11/1994. p. 14.

[33] Antony Chiffings and Abdulwahab Dakkak, 1990. No page number.

[34] SRI International, 1984. P. ES-9.

[35] A. Chiffings & A. Dakkak 1990. No page No.

[36] Abdulaziz M. bin-ayyaf Al-Mogren. **Bridging the Gap, Centralization Vs. Decentralization in The Saudi Municipal Planning System.** Unpublished Ph.D. Dissertation, University of Pennsylvania, 1992. p. 44.

[37] Ibid., p. 44.

[38] Ibid., p. 44.

[39] All quotations from the Saudi Constitution in this thesis are based on the Arabic text as published by the official newspaper **Um Al-Qura** No. 3397 and 3468 in 2/9/1412 and 10/3/1413 H , and reprinted in **Al-Majalah Al-Arabiyah,** and the English text as published in J. Bulloch **Reforms of The Saudi Constitution.** London, UK: Gulf Center for Strategic Studies, 1993.

[40] U.S and R. Nyrop, 1984. p. 210.

[41] Ibrahim Al-Awaji, **Bureaucracy and Society in Saudi Arabia.** Unpublished Ph.D. Diss. University of Virginia, 1971. p.166. Quoted in Al-Ramdan, 1993. p. 31.

[42] US and Nyrin , 1984. p. xix.

[43] Ibid., p. 210.

[44] Ahmad Al-Zahrani, "Judicial Authority in The Kingdom of Saudi Arabia" in M. Al-Tawail (ed.) **Public Administration in The Kingdom of Saudi Arabia.** Riyadh, Saudi Arabia: Institute of Public Administration, 1995. p. 102.

[45] .A. Lerrick & Q. J. Mian, **Saudi Business and Labour Law.** London, UK: Graham & Trotman, 1982. p. 219.

[46] Ibid., p. 224.

[47] Ibid., p. 251.

[48] Ibid., p. 251.

[49] A. Hassan Dahlan, "The Saudi Arabian Council of Ministers: Its Environment, Its Role and Its Future" in A. Dahlan (ed.) **Politics, Administration & Development In Saudi Arabia.** Jeddah, Saudi Arabia: Dar Al-Shorouq, 1990. p. 75.

[50] MERI, **Saudi Arabia** Middle East Research Institute - University of Pennsylvania, New Hampshire: Croom Helm, No date. p. 13. Quoted in Al-Mogren, 1992. p.45.

[51] Faisal Al-Saud, **The Democratic Experience in the Saudi "Open Meeting"** Unpublished Master thesis, California State University, Chico, 1988. p. 89.

[52] Ibid., p. 87.

[53] Quoted in J. Bulloch, **The Shura Council in Saudi Arabia.** London, UK: Gulf Centre for Strategic Studies,1993. p. 10.

[54] Quoted in John Bulloch, 1993. p. 4.

[55] J. Bulloch, 1993. p. 22. emphasis added.

[56] Quoted in J. Bulloch, 1993. p. 13. emphasis added.

[57] Ibid., p. 16.

[58] Ibid., pp. 16-17.

[59] All members are appointed by the King and none have a clear constituent, or represent a specific electoral area.

[60] For more information about relationship between religious figures and the government see A. Al-Yaseeni **Religion and State in the Kingdom of Saudi Arabia.** London: Dar Al Saqi, 1990. (2 nd. edt.) The Arabic translation. Original English text was published by Westview Press, Inc. No date available.

[61] Nasser A. AL-Mobarak, **From Order Taker to Policy Maker.** Unpublished Ph.D. Dissertation, The University of Pennsylvania, Philadelphia, 1993. p. 160.

[62] Ahmad Tawati, **The Civil Service of Saudi Arabia: Problems and Prospect.** Ph.D. Dissertation, West Virginia University, 1976. pp. 52-53. Quoted in A. Dahlan, 1990. p. 71.

[63] N. Al-Mobarak, 1993. p. 161.

[64] Quoted in J. Bulloch, 1993. p. 10.

[65] John Grainger & Othman Llewellyn, " Sustainable use: lessons from a cultural tradition in Saudi Arabia" In **Parks** vol. 4. No. 3. October 1994. p. 8. For discussion of the role of Islamic law in environmental protection see Jomah (1992) and Llewellyn (1992).

[66] Ibid., p. 9.

[67] J. Eighmy and Y. Ghanem, **The Hema System** Working paper series KAU Faculty of Meteorology and Environmental Studies & University of Arizona, 1982. p.1.

[68] Ibid., p.4.

[69] Saad Al-Kahtany "The Traditional Hema and Its role in Sustainable Natural Resources Conservation" in **Proceeding of workshop I on the Ecological Imperatives for Sustainable Development in the Kingdom of Saudi Arabia.** (in Arabic), Riyadh, Saudi Arabia: NCWCD, MEPA, and MAW, 1990. No page number.

[70] This is based on a field survey by the author in the Hejaz and Asir regions in 1985-1986. J. Grainger(1986) suggested that several Hemas are defined by walls. A photograph in Child & Grainger (1990) shows one of these walled Hemas.

[71] J. Eighmy and Y. Ghanem, 1982, p. 4.

[72] Ibid., p. 4.

[73] Omar, Draz, "**The Hema System of Range Reserves in the Arabia peninsula.** FAO/PL.PFC/13.11, 1969 pp.80-81, as revised and reprinted in Appendix 1 of Range and Fodder Crop development: Syria. FAO/AQ:DP/SYR/68/011 1980. Quoted in J. Eighmy and Y. Ghanem. 1982. p.1.

[74] Quoted in J. Eighmy and Y. Ghanem, 1982. pp. 2-3. The bold headings of the subcategories are suggested by the author.

[75] J. Eighmy and Y. Ghanem. 1982. p.3.

[76] Ibid., p.3.

[77] Ibid. p.4.

[78] J. Grainger & A. Ganadilly "Hemas: An Investigation Into A Traditional Conservation Ethic in Saudi Arabia" in **Saudi Arabian Natural History Society Journal,** Vol. 2. No. 6. Jeddah, Saudi Arabia: July 1986, p. 29.

[79] A. Al-Gilani, H. Shelly, & J. Wali **Al-Baha National Park** Unpublished, B.L.A graduation project, Jeddah, Saudi Arabia: K.A.U, School of Environmental Design, Dept. of Landscape Architecture, 1986.

[80] Eighmy and Ghanem, 1982. p. 8.

[81] J. Grainger & A. Ganadilly, 1986, p. 30.

Chapter Five

Saudi Environmental Policies and Laws

Introduction

This chapter consisting of five sections reviews the Saudi environmental policies and laws. The first section review the history of environmental polices and laws. Environmental policy documents are discussed and assessed in the second section. The third section describes and discusses the administrative structure and environmental decision making process in Saudi Arabia. Environmental laws are reviewed in the fourth section including proposed legislation. The fifth section consists of a concluding summary.

5.1 History of Environmental Policies and Legislation

In 1931 the Saudi government, then called the Sultanate of Hejaz and Najd, issued its first law to regulate and manage natural resources the "Fishing in the Red Sea Law". After the establishment of the Kingdom under the name the Kingdom of Saudi Arabia in 1932, the government moved slowly to control land ownership and management. In 1957 for example a Royal Decree abolished the *Hema* system. This decision aimed to give the government a stronger position in natural resource management and to reduce tribal conflict over tribal grazing boundaries. It also aimed to reduce tribal authorities, as part of the detriblisation policy adopted at the time.[1] Consequently many sites which had been protected for hundreds of years deteriorated and lost their rich vegetation cover. It took the government may years to recognize the negative affects of such decisions.

The first step to formalize environmental legislation began in 1970's after adopting the concept of five years development plans. The Animal Quarantine law (CM/208 1396H.), the Plant Quarantine law (CM/207 1396H.), and the Trade in Pesticide law (CM/19 1396 H.) were all issued in 1976. The first two laws aimed to control the increasing threat to local breeds and species, while the third one regulated the commercial selling of pesticides. In 1978, the Wild Animals and Birds Hunting law (M/17/ 1389 H.) was issued. This law remains the basis for hunting control in the Kingdom. In 1978 the Council of Ministers approved the Forestry and Rangelands law, which was issued by the Royal decree (M/22 1389 H.). This law remains today the main legislation regulating the utilization of terrestrial natural resources.

The late seventies thus marked the first stage in the Saudi environmental policies. The Ministry of Agriculture and Water (**MAW**) dominated the administrative arena as the main agency concerned with natural resources. In 1979 the Ministry published an executive document for M/22 1389 H., which sets up a mechanism for implementing the law. In 1980 the Forestry and Rangelands section of MAW was up graded to an independent Directory within MAW, and a new law was issued, the Water Resources Conservation Law (M/34 1400 H.).

The main step to institutionalise Saudi environmental policies was taken in 1981, when the duties of environmental protection was granted to the Meteorology department, which became the Meteorology and Environmental Protection Administration (**MEPA**), an autonomous body within the Ministry of Defence. This introduced pollution as a major factor in local environmental issues which had

previously been limited to wildlife and natural resource conservation, and provided a reasonable administrative structure to deal with the increasing environmental stresses. The early 1980's also marked the first attempt to coordinate the activities of all agencies involved in environmental issues, by establishing the Environmental Protection Coordination Committee (**EPCC**) in 1981.

Environmental standards (01-1409) were approved for the first time in 1982 mainly dealing with air and water qualities, and a new law (8/1182 1405 H.) was issued in 1985 specifying forest land ownership. In 1986 the National Commission for Wildlife Conservation and Development (**NCWCD**) was established as a result of diminishing game animals. Marine environments which came under severe pressure were include in (M/9 1408 H.) of 1988, which dealt with marine conservation. In 1990 the Ministerial Committee for the Environment (**MCE**) was established to serve as the national body responsible for drawing up environmental policies at national and international levels, and to coordinate environmental policy making between the involved agencies and ministries. At the same time, EPCC continued to function as a Preparatory Committee for MCE (**PCMCE**). The activities of EPCC-PCMCE, and MCE, will be discussed in more detail later in this chapter. The National Contingency Plan for Marine Pollution Control, NCPMPC (CM/157 1411 H.) was approved in 1991, this plan established the procedure for tackling marine pollution incidents especially oil spills. The Wildlife Reserves Areas law (M/12 1415 H) was approved in 1995. This law defines the authority of NCWCD and provides the legal base for extending the national system of nature reserves. Table 5.1 lists major environmental events and legislation in Saudi Arabia.

Table 5.1

Major Environmental Events and Laws in Saudi Arabia

Fishing in the Red Sea coast law		1931
First commercial oil production		1938
Abolishment of the *Hema* System		1957
Animal Quarantine law	(CM/208 1396 H.)	1976
Agricultural Quarantine law	(CM/207 1396 H.)	1976
Trade in Pesticide law	(CM/19 1396 H.)	1976
Uncultivated Land law	(M/26 1388 H.)	1978
Wild Animals and Birds Hunting law	(M/17/ 1389 H.)	1979
Forestry and Rangelands law	(M/22 1389 H.)	1979
Water Resources Conservation law	(M/34 1400 H.)	1980
Forest and Rangelands section up graded to a Separate Directory		1980
Establishment of MEPA (7/M/8903) & EPCC		1981
The first National Park -Asir National Park		1981
Environmental Standards	(01-1409)	1982
Obligation to use the best available technology to reduce pollutant emissions and to reclaim quarries and dispose waste	(CM/271 1404H.)	1984
First State of the Environment Report, SoE-84		1984
Forest land Ownership and Conservation law	(1182/8 1405 H.)	1985
Protection of Public Utilities (wadis & water installation) from Waste Disposal	(CM/225 & M/62 1405 H.)	1985
Establishment of NCWCD		1986
Prohibition of Clay Mining from Wadis	(M/1114 1407 H.)	1987
Living Marine Resources within the National Waters. Fishing, Investment, and Conservation law	(M/9 1408 H.)	1988
Establishment of MCE	(5 /B/ 5635)	1990
Conference on Environment and Development in Saudi Arabia		1990
Gulf War- Kuwait oil spill		1991
The National Contingency Plan for Marine Pollution Control "NPMPC"	(CM/157 1411 H.)	1991
The National Report to UNCED-Rio		1992
Hazards Waste Disposal Standards	1413-03	1992
Wildlife Reserves Areas law	(M/12 1415 H)	1995
From Sea to Sea, conference on marine environment		1995
Agenda 21- Saudi Arabia	(CM/78 3/7/1415 H.)	1995
Saudi Environmental Awareness Project		1995
First National Conference on Environmental Pollution and Health		1996

Source: compiled by the author from several sources

5.2 Environmental Policy Documents

Six types of governmental documents addressed environmental issues, and attempted to formalise a framework for national environmental policies.[2] The first is the series of five year development plans, which from 1970 have set policy goals, objectives, and which identify the responsible bodies to carry out policy proposals. The second type of document is the State of the Environment Reports. However, only one comprehensive report was issued, SoE 1984. A second report was published in 1989, though, as will be discussed, it did not include any account or assessment of environmental conditions. In 1992 MEPA drafted a SoE-92; however, it was not published but later redrafted to be issued as the National Report to the United Nation Conference on Environment and Development Rio-92, (NRUN)

In 1990 the NCWCD in association with the IUCN, prepared "A Plan to Protect Areas in Saudi Arabia." This document can be considered as the third source of Saudi environmental policies, despite the fact that it was not officially approved. This comprehensive report was the first serious attempt to draft a conservation strategy in order to protect representative samples of ecosystems and habitats within the Kingdom's boundaries. In the same year, 1990, the government, represented by MEPA and in coordination with the United Nations Development Program (UNDP), organized a conference on Environment and Development (18-20 March/1990). This conference was the first attempt to bring together all involved agencies to discuss and debate national environmental policies in the kingdom. The participants included United Nations advisers. The recommendations of the conference can be considered as the fourth document addressing national environmental policies, and it was included in the National Report to the UNCED held in Rio in 1992 "NRUN". This report stated that:

> "The conference (Environment and Development in Saudi Arabia, 1990) recommendations were approved by the concerned Ministries and government agencies. These recommendation will become an official collective document after the pending approval and ratification by the Council of Ministers."[3]

The National Report to the UNCED, NRUN- 1992 was prepared to represent the Kingdom's environmental policies and management to the international community, and is the fifth main official account of Saudi environmental policy. It is also the last document to date to contain information on the state of the environment. Agenda 21-Saudi Arabia was officially adopted in 1995 as result of Rio-92, this document is the last environmental policy document to be adopted by the government todate. The following subsections will briefly review these six governmental documents.

5.2.1 Development Plans 1970-2000

The Kingdom of Saudi Arabia began its programme of development plans in 1970 with the first five year plan (1970-1975). This concept of planning national growth and development aimed to set national goals which were to be achieved within the planned period via a precise set of objectives, policies and programme proposals. The first clear attempt to establish environmental policies and criteria can be found in the third development plan 1980-1985. To achieve environmental protection the plan suggested the following objectives:

> "To provide and develop a comprehensive environmental services by determining and promulgating standards for ambient air and water quality; to establish a comprehensive monitoring and surveillance of the air, water and solid waste disposal practices of the Kingdom; and to implement a broad public education program on the environment."[4]

The establishment of MEPA during this plan period provided the administrative structure capable of carrying out most of these objectives.

Environmental standards, and primary monitoring capability were established by MEPA, though not enough to cover all major pollution sources in the kingdom. On the other hand no real efforts were taken to introduce environmental awareness at national level. The fourth plan referred to environmental issues when discussing water, health, and agricultural policies. The following will discuss the fifth and sixth development plans in relation to environmental policies and programmes.

1- The Fifth Development Plan 1990 - 1995

The fifth plan 1990-1995, contained the most comprehensive policy proposals and assessments of environmental issues. Section 15.4 of the plan entitled, "Development and the Environment" discussed the environmental issues in relation to development policies. It contained the following subsections:

- 15.4.1 Role and Objectives of Environmental Protection.
- 15.4.2 Achievements and Key Issues.
- 15.4.3 Role of the Private Sector in Environmental Protection
- 15.4.4 Policies and Main Programmes
- 15.4.5 Future Outlook.

The ideological and moral position of the Kingdom's policies towards the environment was spelled out in this document:

> "Development and environmental protection should not be perceived as separate or conflicting challenges; both are inexorably linked. Development cannot flourish upon a deteriorating environmental resources base; neither can the environment be protected when development ignores the cost of environmental destruction. If economic growth were to take place at the expense of ever deteriorating environmental resources and conditions, the quality of life and the well-being of people (the ultimate goal of development) would be seriously affected. Environmental neglect destroys assets that are vital to life itself."[5]

The plan indicated the government's concern for negative effects of its development policies, and conceived that environmental issues can not be limited to or isolated in any single sector of the economy. Two long term goals were stated:[6]

1- To upgrade and enhance the quality of life and the well-being of citizens, and to ensure pollution-free environment with fresh air, clean water and healthy food.

2- To achieve sustainable development on the basis of prudent management of available natural resources and environmental capacities, and the rehabilitation of the environment previously subject to degradation and misuse.

The plan suggested the following objectives to the concerned agencies to be used during the fifth plan period 1990-1995, as means to fulfill the above stated goals.[7]

- To protect the environment and preserve its natural characteristics and ecosystems, and to conserve natural resources.
- To protect and develop the different wildlife forms in the Kingdom whilst maintaining ecological equilibrium and preserving diversity in animal and plant genetic resources.
- To achieve a sustainable balance over time between population distribution and environmental capacities, with due regard to the effect of population growth and consumption pattern on the natural resources base.
- To provide sufficient energy at reasonable cost in ways that minimize the risk of environmental degradation, that conserve non-renewable energy resources, and that realize the full potential of renewable and clean energy sources, such as the sun and wind.
- To achieve the highest feasible degree of industrial expansion through the use of the most recent available technology which strictly adhere to environmental protection standards at all stages of design, construction and operation.
- To attain the highest feasible degree of food security without resource depletion or environmental degradation, and to restore the resource base (water and land) where environmental damage has been occurring.

These objectives reflect the change in the institutional structure during the period of the previous plan, Wildlife conservation and biodiversity issues are

evidence of the role played by the national Commission for Wildlife Conservation and Development (NCWCD) in introducing these issues to the national level. On the other hand the last objective prepared the ground for the recent policy shift in subsidized wheat farming, which had lead to the depletion of underground aquifers. The plan attempted to assess the successes of the pervious policies and plans. The short account under subsection 15.4.2 recognized the lack of cooperation between concerned ministries and agencies.[8] The failure to adopt some vital proposals such as the environmental impact assessment law prepared by MEPA is one of the results of this lack of cooperation. In its assessment the plan stated that MEPA "achieved *some* success in the implementation of its environmental protection programmes and services."[9] However, as will be evident later this limited success remained mainly in the stage of survey, research results and recommendations, and little reached the implementation stage. The most critical and constructive part of section 15.4 "Development and the Environment" is the listing of "key issues which needs attention during the fifth plan period" (See Box 5.1)

Box 5.1. Key Environmental Issues, Fifth Development Plan 1990-1995

Environmental Standards: There is need for a clear set of environmental standards, regulations, specifications, and guidelines that must be observed in industrial, agricultural, commercial, and urban activities affecting the environment. In this regard, the review, consolidation and appropriate amendment of all existing rules and regulations concerning licensing, monitoring, inspection, implementation and enforcement will be carried out to protect the environment.

Environmental Impact Assessment: Should become an integrated part of feasibility studies for new projects and programs. Up till now there has been no general system for the inclusion of environmental impact assessment and social cost-benefit analysis in program and project decision making.

Environmental Awareness: Public awareness of the environmental implication in all aspect of every day activity is not adequately developed. This require the cooperation of various public and government agencies through education and more widespread dissemination of information about the effect of public behavior on the environment. The citizens role and cooperation in conserving and preserving the environment is essential and has no substitute.

Enforcement of Environmental Regulation: Enforcement of existing environmental regulations is inadequate, because there is no clear definition of mandates, responsibilities and authority to enforce these regulations. This is all the more serious in the absence of sense of awareness and voluntary cooperation on the part of the general public. Violators of environmental codes should be made aware of the penalties for violation, which should help in their enforcement.

Environmental Monitoring: There is a need to develop and implement an active system of monitoring parameters and environmental degradation.

Coordination of Environmental Activities: The activities of many government ministries have direct effect on the quality of the environment, including the ministries of Agriculture and Water, Defense and Aviation, Municipal and Rural Affairs, Petroleum and Mineral Resources, Industry and Electricity, Interior, Health, Communications, Commerce, and Planning; other public sector agencies include the Port Authority, the Standards Organization, the High Commission for the Development of Arriyadh, and King Abdulaziz City for Science and Technology. There is a lack of coordination between MEPA and these other decision making bodies involved in the planning and implementation of environmental work. Positive steps should, therefore, be taken to remove these obstacles to enhance cooperation among relevant agencies.

Source: MCE, National Report to The United Nations Conference On Environment and Development. 1992. Appendix 1., pp. 4-5.

This listing of "Key Issues" was an excellent account of existing problems and the lack of vital policies, plans, and programmes concerning the environment. The plan diagnosis and prescription, although in all cases brief and broad, established a clear policy direction and indicated the government's concern for the increasingly degraded environment. However, the suggestion of consolidation and review of all regulations concerning licensing, monitoring, inspection, implementation, and enforcement of environmental standards was not fulfilled during the fifth plan period 1990-1995. Moreover, Environmental Impact Assessment failed to gain approval as a compulsory requirement in all development activities, an issue of concern in the fifth plan. On the other hand environmental awareness noticeably improved in the 1990's, though concentrating mostly on wildlife conservation with little attention given to pollution and environmental health. Nevertheless, the Saudi Project for Environmental Awareness attempted to cover this topic. The lack of coordination between MEPA and other agencies involved in the environmental issues was still evident and little was achieved in improving this critical problem, despite the fact it was explicitly stated in the fifth plan. Agencies relationships and conflicts will be discussed in more details in this chapter and the following one.

The plan stated that MEPA as "the principle environmental protection agency" was delegated the task to coordinate and implement the following policies during the plan period:[10]

- Developing and enforcing a comprehensive set of environmental regulations relating to: air. water and land pollution; disposal of solid, liquid and gaseous wastes; use and disposal of all chemical, pesticide and radioactive materials; control of pollution to food and drinking water.

- Establishing and implementing a system of environmental impact assessment in all projects undertaken by government agencies, so that factors influencing feasibility and licensing decisions will include environmental considerations, rather than its construction, economic or urban significance alone.

- Enhancing technical capabilities to monitor and analyze information necessary to anticipate environmental damage and take preventive measures.

- maintaining and updating a permanent inventory of the Kingdom's natural and development resources, key ecosystems and wildlife.

- Reducing the adverse environmental impacts of transportation, especially in highly populated areas, through the enforcement of emission standards for vehicles, the encouragement of fuel efficiency and the use of lead-free fuel, and improve traffic management and urban planning programmes.

- Adopting national plans for the use of agricultural land, pastures, forests and water resources, with due regard to the conservation of these resources for use by there future generations and the prevention of their degradation.

- Adopting appropriate measures to carry the required liaison between the different agencies involved with environmental issues and protection, and to enhance MEPA's role and mandate in this regard.

- Cooperating closely with other environmental-related organizations, both within the GCC countries and internationally.

It should be clear that these policy proposals the plan mandated to MEPA do not have the status of official law, nor can it be considered as an official addition to MEPA mandate of 1981. However, most of these policy proposals were not achieved during the plan period 1990-1995. Some proposed policies fall within the mandate of other agencies, such as the suggestion to adopt a national plan for the use of

agricultural land, pasture, and forest, which falls within the authority of the Ministry of Agriculture and Water. The suggestion that MEPA should carry out the required liaison between the involved agencies, is an indicator of the assumed position of MEPA as an influential body at the policy making level. This is based on the fact that it is part of the Ministry of Defense. Nevertheless, MEPA's role and mandate was not enhanced to carry out this coordination activity. In addition to the above listed policies, the plan suggested the following programmes as means to implement the proposed policies. Those were delegated to both MEPA and NCWCD:[11]

- Review and amend complete set of standards, regulations and specifications dealing with environment and pollution abatement, that must be adhered to in all sectors of society.
- Monitoring environmental indicators, including levels of pollution.
- Complete the development of nationwide environmental information and database.
- Improve and expand the weather information system and services
- Intensify educational and awareness campaigns with regard to environmental protection and wildlife conservation.
- Complete the establishment of a network of wildlife reserves, and development of two major wildlife research centers.

The fifth plan presented a clear and constructive assessment of the national environmental issues, followed by a list of policy and programme proposals aimed to solve the existing defects of the national environmental policies. Unfortunately most of the proposed policies were not achieved during the plan period. Nevertheless, it was a conscientious attempt to establish national environmental goals and prepared the ground for future policies including the sixth plan.

2- The Sixth Development Plan 1995-2000

One of The sixth plan "Basic Strategic Principles" was devoted to environmental issues. It stated that:

> "Safeguard and enhance the natural environment and prevent pollution by implementing the following policies:
>
> **1-** Protecting the environment and safeguard its natural characteristics, in addition to the maintenance of natural resources;
> **2-** Protecting and developing wildlife in the Kingdom, together with preserving the natural equilibrium of its ecology in terms of the genetic diversity of its zoological and botanical makeup;
> **3-** maintaining continued equilibrium with regard to optimal population distribution and environmental integration-- taking into consideration the impact of population growth and consumption patterns on natural resources."[12]

The environment was also included in the "key issues of the sixth plan" section 3.5. This section, entitled "Environment and Development Issues", suggested that the government environmental policies are integrated with development policies rather than conflicting with them. And that the kingdom's basic environmental strategy integrates the planning, institutional and management dimension through achieving balanced sustainable growth; considering the environmental dimension at all stages of development projects; maintaining a sustainable balance between population distribution and absorptive capacity of the environment; preserving biological diversity and protecting wildlife; providing environmentally clean energy for industrial activities; expanding the private sector role in environmental protection; intensifying and developing environmental awareness and education; completing the establishment of a comprehensive national environmental data base.[13] Nevertheless, this claim and list is not accurate; as will be clear through this thesis, the over all structure of environmental policies in the kingdom is lacking these integrated planning, institutional, and management activities, in addition to the

large gap left by not advocating and enforcing environmental impact assessment of development projects.

Chapter 14 "Development and the Environment" of the sixth plan was allocated for environmental issues. A list of major environmental achievement was given, thought without reference to the failure to apply environmental policies and programmes proposed in the fifth plan. Once more "Key Issues" which formed section 14.2 gave a good and clear assessment of some environmental issues, in addition to proposed policies to solve the prescribed defects. The seven key issues suggested by the plan are: Indicators of Sustainable Development; Environmental Information and Data; Waste Management; Air Quality; Fresh Water resources; Management of land Use and Combating Desertification; Management of Coastal and Marine Areas. It is noticeable that several issues which were part of "key issues" in the last plan are not included in this list, such as, Environmental Standard; Environmental Impact Assessment; Environmental Awareness; Enforcement of Environmental Regulation; and coordination of Environmental activities. It is difficult to speculate on the reason for excluding such issues despite the fact that the proposed policies were not satisfied. It might be the suggestion that such issues are not of concern at this stage and emphasis is shifting to new areas. On the other hand it does not seems that such unrealised policy proposals weigh much for environmental agencies, where listing of new issues is the matter of forma, instead of repeating potential embarrassing parts of the old list. Environmental standards and the recommendation to issue a national system for environmental impact assessment were included in the sixth plan proposed "environmental policies".

The private sector was addressed by section 14.4 which recommended the possible participation in several activities to play an active role in protecting the environment. Section 14.5.2 contained the Saudi "environmental polices" during the sixth plan period. It stated that "To achieve the environmental objectives, the sectoral agencies whose activities have an impact on the environment will implement the following policies during the sixth plan."[14] (See Box 5.2)

Box 5.2 Environmental Policies- Sixth Development Plan 1995-2000

- Adopt a preventive approach that avoids or reduces environmental deterioration and pollution.
- Issue a national system for environmental impact assessment (EIA) to be adopted in projects undertaken in the various development sectors through the kingdom, especially the industrial, agricultural and urban projects.
- Draft and complete an integrated set of environmental standards and specification, and update them according to need and progress, within the context of an integrated environmental system at national level.
- Taking environmental consideration into account in the various stages of development projects(i.e. planning, design, construction, operation) in all sectors especially the producing sectors of agriculture and industry, whereby all projects shall be subject to environmental impact assessment.
- Take appropriate measures to maintain bio-diversity, preserve wildlife and conserve and manage natural resources according to the concept of sustainable development.
- Enhance environmental management and coordination at national level through:
  - Completion and issuance of national environmental code.
  - Studying the feasibility of establishing an environmental unit within each environmental related agency to coordinate the environmental tasks within the agency and between the agency and the general secretariat of the Ministerial Committee for the Environment and MEPA.
- Encourage the private sector to participate in environmental protection and pollution control activities, and encourage in investment in environmentally oriented activities and industries, such as waste treatment and recycling plants, and to encourage the use of environmentally sound technologies.
- Develop manpower resources in the field of environmental science and attract qualified national manpower into the government and private sector.
- Establish and manage the set of protected areas in a way that protects and develop the Kingdom's wildlife and preserves the diversity of botanical and zoological species and other natural resources.
- Support research and studies related to the proliferation and breeding of various wildlife species, in order to ensure their continuity and re-settlement in their natural habitat.
- Prepare a comprehensive national environmental awareness plan.

Source: MOP, **Sixth Development Plan.** 1995. pp. 410-411.

It is noticeable that agricultural and urban projects were included in the proposed EIA system. This system is long overdue especially when considering the impact of intensive commercial agriculture on the environment, and the depletion of underground aquifers. On the other hand there is no indication that strategic environmental assessment (SEA) is considered in evaluating the impact of national development policies, which will prove to be a major gap in the sixth plan environmental policies. Evaluating environmental impact of national policies can be useful in avoiding downstream environmental problems. Although EIA is still under consideration, adding SEA to the proposed system will improve national coordination of environmental impact. The suggestion to enhance coordination of environmental management at national level was not clear. MEPA acts as the Secretary General of the Ministerial Committee on the Environment (SGMCE) and more specific role was needed, since lack of coordination is one of the main obstacles in implementing environmental policies in Saudi Arabia. Support of research should taken a wider scope than the breeding of wildlife species. There is deficiency in research funds for other environmental studies including, resource management, marine studies, pollution, waste management, and environmental planning (further discussion of environmental research will follow in the next chapter). The proposed polices need to be more focused including a time limit, e.g. to adopt the national system for environmental impact assessment within the first two years of the plan, to avoid dragging it into a third plan period.

Section 14.5.3 listed several environmental programmes to be implemented during the sixth plan period. (See Box 5.3 for these programmes).

Box 5.3 Environmental Programs-Sixth development Plan 1995-2000

Meteorological Services: This program aims at the provision of meteorological and climatic services, the development of observatories at air ports, the improvement of weather forecast on air routes, the provision of information on weather conditions to pilgrims and citizens, and improving the efficiency of the meteorological data base for agriculture.

Environmental Protection: The aim of this program is to address all environmental issues in a comprehensive manner, through the identification and follow-up of environmental problems at national level, contributing to the control of all environmental pollution, and boosting citizen's environmental awareness.

Protected Areas: this program aims at the management and operation of a series of protected areas through intensified protection measures therein, as well as the implementation of procedures for re-settling various rare and endangered animal species in their natural habitat.

Information and Environmental Awareness: This program aims to provide information and raise citizen's awareness at all levels about the environmental significance and beauty of wildlife and to provide them with opportunities for positive responses to the activities of NCWCD through information campaigns, specialized films and scientific symposia.

Source: MOP, **Sixth Development Plan.** 1995. p. 411.

The first two programmes are sponsored by MEPA while the last two by NCWCD, it is noticeable that no programs proposed by MAW. The second programme Environmental Protection "the identification and follow-up of environmental problems at national level", is the most interesting. However, no

information on such a programme is available and much more clarification of programmes's objectives are needed.

5.2.2 State of the Environment Reports

The first State of the Environment Report in Saudi Arabia was published in 1984. This document was the first constructive effort to evaluate and assess environmental conditions, and a direct result of the establishment of MEPA in 1981. However, it was the first and last comprehensive SoE in Saudi Arabia.[15] This document was prepared by a foreign consultant 'SRI International' and contained for the first time in one document an account of the Kingdom's air quality, water quality, solid residuals, marine environment, and terrestrial environment. It is assumed that this document had an influence on the fourth and fifth development plans and their emphasis on the environmental impact of development activities. The report is characterized by its analytical and critical attempt to indicate environmental problems and their causes. It stated that "Relatively little quantitative information on environmental conditions in Saudi Arabia is available. What is known indicated that environmental problems exist, as is exemplified by known violation of the recently issued air quality standards".[16] Five chapters formed this report:

1- Introduction
2- Development Activities that Affect the Environment
3- Environmental Management Activities
4- Environmental Conditions
5- References

The information provided in this report gives a good reference for evaluating the success of environmental policies and management which took place after its publication. Since 1984 all areas covered in chapter four (Environmental conditions) e.g. marine environment, experienced environmental degradation resulting in severe

destruction of fragile habitats and increased level of pollution. The most obvious disadvantage of this report is the fact that it was written in English, which indicates that it was not available to many government officials and certainly not the public.

In 1989 MEPA issued another SoE in Saudi Arabia, a two volume report. The first volume consisted of 39 pages dealing with conservation, pollution control, monitoring the environment, and public awareness. The bulk of this volume consisted of coloured photographs of wildlife and the Saudi landscape. On the other hand the text provided no information on the state of the environment, let alone any assessment or proposals of environmental policies and management. The second volume consisted of 16 pages, providing information on environmental institutions and their activities. Contrary to what it stated "This report, in two volumes, addresses the state of the environment in the kingdom of Saudi Arabia, with emphasis on the extent to which Saudi Arabia has institutionalised its approach to environmental protection and pollution",[17] this edition of SoE did not aim to provide information on the environmental conditions and stress, but merely made available a colourful booklet advertising MEPA and NCWCD activities.

5.2.3 Conference on Environment and Development in Saudi Arabia

In March 1990, MEPA in coordination with the United Nations Development Program UNDP organized a conference on "Environment and Development in Saudi Arabia". What makes the recommendation of this conference part of the national policy document is the fact that is was approved by all agencies and ministries involved in the environmental issues. The National Report to the UNCED stated that "These recommendations will become an official government document after the pending approval and ratification by the Council of Ministers" [18] This effort shows

a serious attempt by MEPA to formalize a clear environmental policy for the Kingdom. The conference recommendations, consisting of eight sections, established comprehensive guidelines and policy proposals covering many environmental issues. The main sections of the conference recommendations are as follows:

1- Development Planning
2- Industrial Development
3- Agricultural Development
4- Cultural Development
5- Urban and Rural Development
6- Protection and Development of Wildlife and Natural Habitats
7- Environmental Regulations
8- Other Recommendations

5.2.4 The National Plan to Protect Areas in Saudi Arabia -1990

After the establishment of the NCWCD in 1986 it attempted to establish a national strategy for nature conservation to protect the threatened habitats of endangered species. The result of this effort was presented in "A Plan to Protect Areas in Saudi Arabia".[19] The document which was written by Child & Grainger was prepared with the cooperation of IUCN, and was published in 1990 by the Commission. The Plan is the most comprehensive document dealing with the Kingdom's nature conservation and wildlife habitats. It provides a genuine account of the kingdom's habitat conditions and wildlife distribution, in addition to good analysis of socio-economic factors in nature conservation. The Plan proposed a national system of protected areas, and a strategic action plan, in addition to management proposals for the protected areas. It concluded by reviewing and drafting a mandate for the National Commission of Wildlife Conservation and

Development (NCWCD.) The Plan consisted of nine chapters covering the following topics:

1- Introduction
2- The Biophysical Setting
3- Socio-Economic Setting
4- Resources Conservation and Development
5-The Wildlife Resources
6- Rational for Protected Areas
7- A system of Protected Areas
8- Managing Protected Areas
9- The National Commission for Wildlife Conservation and Development

Unfortunately this comprehensive effort was never approved, in fact it failed to gain the support of the NCWCD board of directors. It is difficult to speculate on the reasons behind this rejection, but the complexity of establishing nature reserves, would have resulted in a wide conflict of authority between concerned agencies. Furthermore, land ownership and conflict of land use activities would add to the problems. Nevertheless the NCWCD gained approval of its proposed Wildlife Reserves Areas law (M/12 1415 H.) in 1995, which might be a step to implement "A Plan to Protect Areas in Saudi Arabia" by gradually avoiding direct clashes with other agencies. The activities of NCWCD will be discussed in more detail in the next chapter.

5.2.5 The National Report to the United Nations Conference on Environment and Development-Rio 1992 (NRUN)

This report was prepared to be submitted to the UNCED held at Rio in 1992 as an official government document. It was co-ordinated and prepared by the

Ministerial Committee on the Environment (MCE). Considering that the last official report on the state of the environment was published in 1989, this report provides the only national account of environmental conditions and policies during the fifth plan period. The report suggested that four agencies mainly participated in its preparation, MOP, KACST, MEPA, and NCWCD. However, it is assumed that several other agencies provided the data. According to a senior MAW official, the MCE represented by its secretary general (MEPA) suggested that the report should be issued under the MCE name with no other agencies mentioned, which didn't happen. This caused disappointment for MAW officials, a major participant in the preparation process of the report.[20] Such incidents indicate the continuous rivalry between environmental agencies.

This report is characterised by its official language and with the exception of few cases lacks the critical perspective found in the SoE/84, and the fifth development plan/1990. Nevertheless it provides a good source of information which never existed within one document before. The report consisted of seven chapters covering most issues related to environment and development in the Kingdom. This included a description of natural resources, economic development, agricultural policies, energy and industry, education, health, transportation, municipalities, conservation and environmental protection policies, and a chapter on the Gulf war effects. In general the report doesn't add any new policy or management proposals to that included in the fifth plan. At the same time it can not be considered as a State of the Environment Report since it doesn't provide a critical review of the environmental conditions in the Kingdom and a follow up of policy implementation.

5.2.6 Agenda 21- Saudi Arabia

One of the products of Rio-92 was Agenda 21 which provides a framework for national environmental policies in addition to international coordination. Agenda 21 -Saudi Arabia which was based on the UN document received approval from the CM in 1995.

1- The Politics of Agenda 21

In Rio-92 the Kingdom of Saudi Arabia, as other nations did not sign Agenda 21, in addition to the Biodiversity Treaty, the Climatic Change Treaty, and Rio Declaration. The chairman of the Kingdom's delegation to the conference Hesham Nazir, then the Minister of Petroleum and Mineral resources noted in his report:[21]

> "Although Agenda 21 is not legally binding it places a moral obligation at high political levels, it includes several details regarding the protection of the atmosphere which have been forced by industrial nations especially in the sectors of energy and transportation which affect the Kingdoms interest. Further more, the document reflected the western social and economic values and activities without consideration of international variation of these values."

This assessment of Agenda 21 is quite accurate and reflects a good and clear vision from the Kingdom's representatives to Rio-92, where the New leviathan uncovered its face by dictating to developing and under developed countries what to do and not to do. The attempt to establish a unified system of moral and social values can be noticed in all of Rio's products. These values, as Hesham Nazir said reflects only the western society. The report suggested that the MCE should study this document by involving all related governmental agencies each in its field. Later the UN can be informed of which sections the Kingdom is planning to accept.[22] In his comments the Minister of Agriculture and Water indicated that Agenda 21 gave international and regional organisations rights to assess and evaluate development activities in each country including the directions of theses activities. This gives

foreign bodies the right to be involved in internal affairs. The Minister recommended that the Kingdom should not sign Agenda 21.[23]

The MCE was delegated the authority to evaluate and assess Agenda 21, this included feed back from concerned ministries and agencies. In 3/7/1415 H. (1995) the CM approved Agenda 21- Saudi Arabia.

2- Agenda 21 - Saudi Arabia

The approved document which was prepared by the MCE stated in its introduction:

> "After comparing the Kingdom's achievements with Agenda 21 items, it became clear that the Kingdom is in a good and elevated position in many development and environmental sectors. This (position) is what the Kingdom's policies and strategies emphasis to achieve the balance between environmental protection and sustainable development."[24]

The introduction gave in five pages a summary of the Kingdom's environmental policies, institutions, goals and objectives, and achievements. The document recommended a list of programmes and points (derived from the UN Agenda 21) which were:

> "To be considered at the national level by including them in the suitable framework of the Kingdom's development plans through the responsible executive bodies in coordination with the MOP. These recommendations are the accumulation of what was received from involved Ministries and agencies, which have been revised, discussed and amended by the study committee."[25]

The language of the document indicates that the approval of such a document was part of international trend rather than constructing a future plan for environmental policies. The recommendation occupied 17 pages covering the following sectors:

- Agriculture-Water-Natural & Coastal resources

- Municipal & Rural Affairs
- Science & Technology
- Petroleum & Mineral resources
- Health
- Environmental Awareness
- Environmental Education
- Environmental Planning
- Environmental Protection
- Follow up Mechanism

The first sector was the most elaborate covering seven pages followed by the second sector which covered four pages. The recommendations were a conscientious listing of urgently needed measures to establish long term policies in order to improve environmental qualities and conserve natural resources. However, most issues raised were previously covered in development plans or governmental agencies programmes and plans. Never the less, new issues such as concern for new advances in genetic engineering, and protecting local biodiversity were raised. No evidence exists to indicate that this document will be taken seriously or translated into real actions by governmental agencies. The only item giving some hope stated "All agencies with connection to environmental activities will establish an Environmental Unit in each body according to the *available* resources."[26] However, this item is not clear and an ambiguous, in addition to the obvious failure to allocate new resources for such units, which is another indicator that these recommendations might not materialise and be implemented. No steps have been taken since the approval of Agenda 21-Saudi Arabia to construct regional or local action plans based on the national policy document.

In addition to these six official document, the "General Law of The Environment" is in the drafting stage. This document is prepared by MEPA, and is expected to provide the legal base for environmental policies and laws in Saudi Arabia. A discussion of this document will follow in this chapter, section 5.4.4 'proposed legislation'.

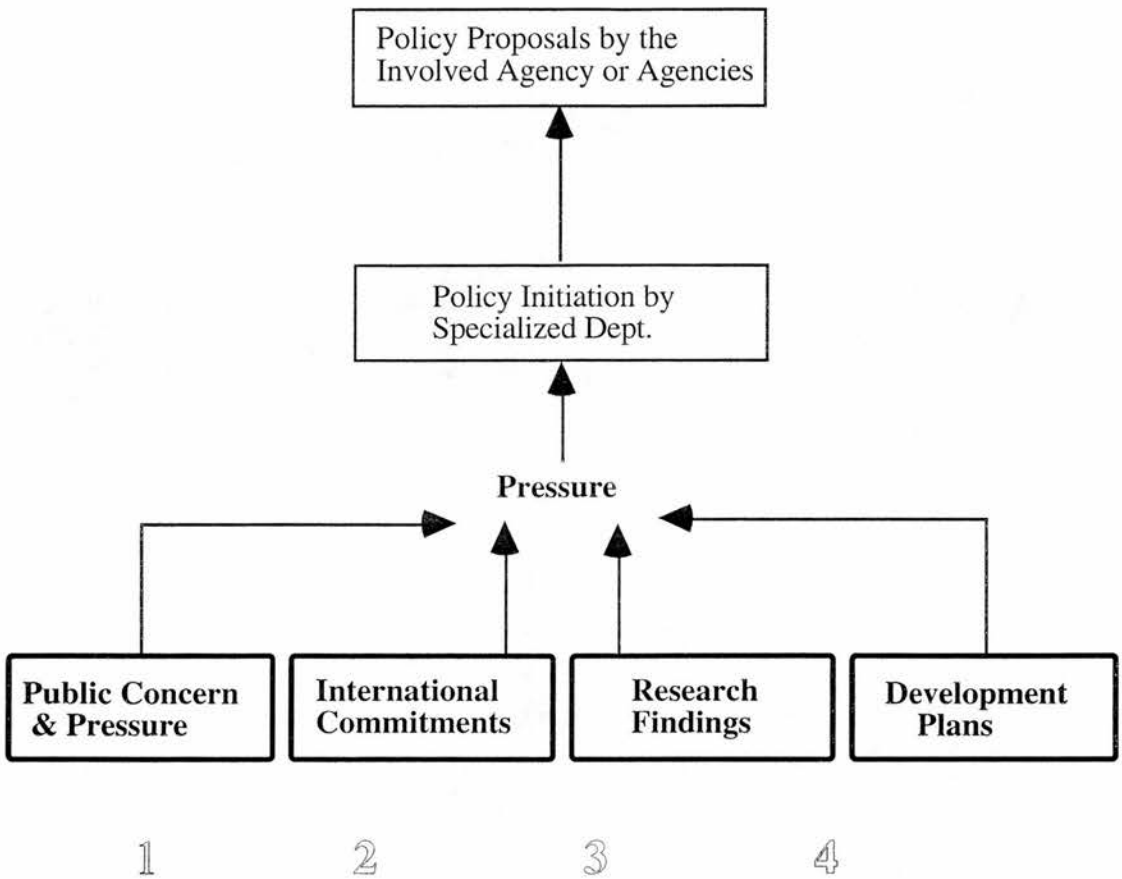
5.3 The Administrative Structure and Environmental Decision Making

As is the case of other countries the process of environmental decision making in Saudi Arabia is complicated by the diversity of players involved in the process, and influenced by the political system and prevailing political culture. This section will clarify the process of environmental policy making and categorize the major contributors to environmental policies in the Kingdom according to their role and administrative rank.

5.3.1 Environmental Decision Making Process

As is the case of other countries the process of environmental decision making in Saudi Arabia is complicated by the diversity of players involved in the process, and influenced by the political system and prevailing political culture. The process includes both that of environmental policy making and legislation. Theoretically Development Plans are the main source of national environmental policies, however, formalising environmental policies can be a more complicated process. The classical path of formalising environmental policy in Saudi Arabia starts from departments within environmental agencies or Ministries involved in environmental issues. In Saudi Arabia several factors can influence environmental

policy initiation. The first is continuing public concern and complaints. This factor usually reaches the involved agency through direct contact or via other means such as media coverage, local government *Emirates*, or the Royal Court. Commitment to international agreements and protocols forms the second factor behind initiating and adopting policy proposals. In the last ten years the Kingdom has participated in many regional and international meetings related to environmental issues, and in some cases with commitment to implement policies and regulations. These commitments lead to the adoption of policy proposals and the initiation of new legislation. Research findings and environmental survey results form the third possible factor in environmental policy initiation, where some agencies, especially MEPA, have carried out extensive research work mainly with international consultants, which has resulted in policy and management proposals. However, when considering the overall scope of policy making in the Kingdom, Development Plans can be considered as the fourth factor of initiation, as they provide the general base for policy initiation and proposals. The Fifth and Sixth Plans are a good example of initiating environmental policy proposal. Further discussion of the public role will follow in chapter six. (See Fig. 5.1 for Factors Affecting Environmental Policy Initiation)



Venues to Express Public Concern

- Local media
- Concern & complaints to involved agency
- Concern & complaints to the local governor
- Concern & complaints to the Royal Court

Research Initiation

- Initiated by the relevant agency
- Requested by governmental body
- Recommended by a member of the Royal family
- Based on previous research findings

Figure. 5.1 Factors Affecting Environmental Policy Initiation in Saudi Arabia

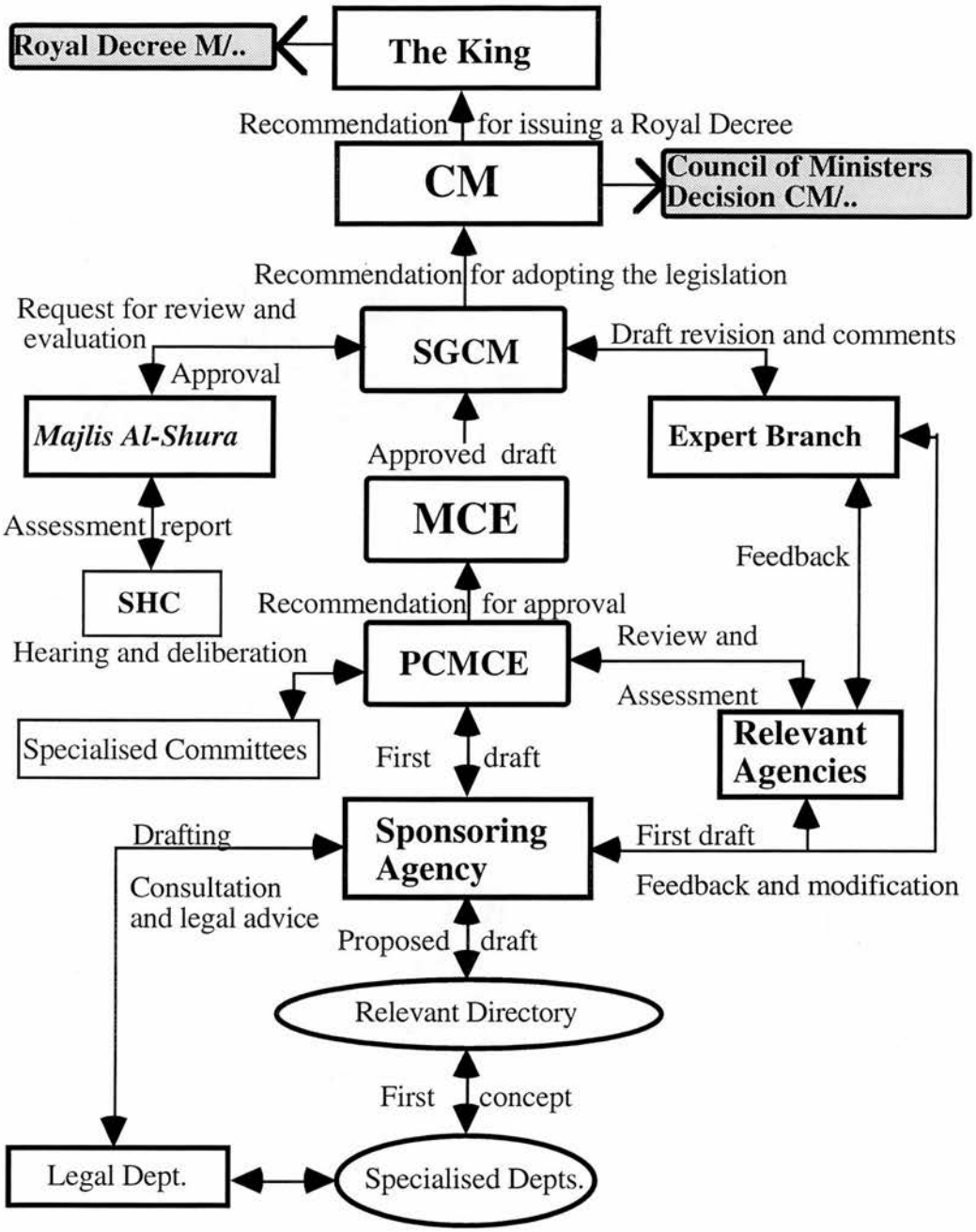
Source: Compiled by the Author

The legal departments within the sponsoring agency evaluate the consequent responsibilities which might be carried out by the body responsible for monitoring and implementing the proposed policy/law. If the concept of the policy proposal/law receives initial approval from inside the sponsoring agency, a draft proposal is prepared and submitted to the director or general manager, who will pass it to the board of directors, as in the case of NCWCD, or deputy minister, as in the case of MAW for discussion and assessment. The approval of the head of the agency or the minister is the final step before the proposal can be submitted to PCMCE where all agencies and ministries involved in environmental policy and management are represented. The PCMCE will discuss the proposal and in all cases will distribute copies to member agencies for assessment and feed back, it also might refer some cases to specialized committees for further expert opinion. The overlap of authority is of major importance to environmental agencies at this stage, in addition to any loss of authority and conflict of interest. It is the case that most of the discussion and argument in PCMCE covers the overlap and loss of authority by any proposed policies, legislation, and programmes. The delay of the MEPA proposal of an EIA law by MAW and MOMRA can be partially attributed to this reason. If the policy, law, or management proposal is approved by PCMCE, a process which might take several years, it will be submitted to MCE for final approval, and to be officially adopted by the relevant agencies and ministries. If not it might stay at this level of decision making for some time or be withdrawn for further study and modification. (See section 5.3.3 for further discussion of PCMCE-MCE role)

This process is the model path for environmental policy making and legislation, and it is agreed upon by all ministries and agencies involved. However, until recently proposals might be submitted to the Council of Ministers without any

comments or feed back from other players. This usually took the conflict to a higher level in the decision making process. The establishment of the Ministerial Committee for the Environment (MCE) in 1990 helped in bringing the involved parties together to solve their conflict before any proposal reaches the CM and later *Majlis Al-Shura*.

If the proposed legislation passes through the MCE, the sponsoring agency will officially submit the proposed legislation to the Council of Ministers for discussion and approval. This stage starts at the Secretary General of the Council of Ministers (SGCM) who administers the work of the Council. The draft policy/legislation will then be passed to the Consultative Council (*Majlis Al-Shura*)for discussion and suggestions. Within the Council, the Social and Health Committee (SHC), theoretically will discuss and deliberate over the proposal. The committee might recommend the holding of a hearing on the topic to listen to expert opinion in the field.[27] Then it will submit its report to the council for discussion and approval.[28] The Council will send their approval or/and recommendation for any amendments to the Council of Ministers. The proposed policy/legislation will then be passed to the Expert Branch for study and comments, which might include a discussion with representatives of the involved agencies or ministries. After the recommendation of approval by the Consultative Council and the Expert Branch comments and revision, the SGCM will recommend the Council of Ministers to adopt the proposed legislation, and to issue a "Council of Ministers Decision", e.g. the Wildlife Reserve Areas law (CM/128 1415 H.). The final shape of the policy/law can take the form of a Royal Decree in addition of the CM decision, e.g. CM/128 was followed by the Royal Decree (M/12 1415 H.). (Fig. 5.2 shows the process of environmental decision making in Saudi Arabia.)



CM: Council of Ministers SGCM: Secretary General of the Council of Ministers MCE: Ministerial Committee on the Environment

PCMCE: Preparatory Committee for MCE SHC: Social and Health Committee

Figure 5.2 Process of Environmental Decision Making in Saudi Arabia
Source: Compiled by the author

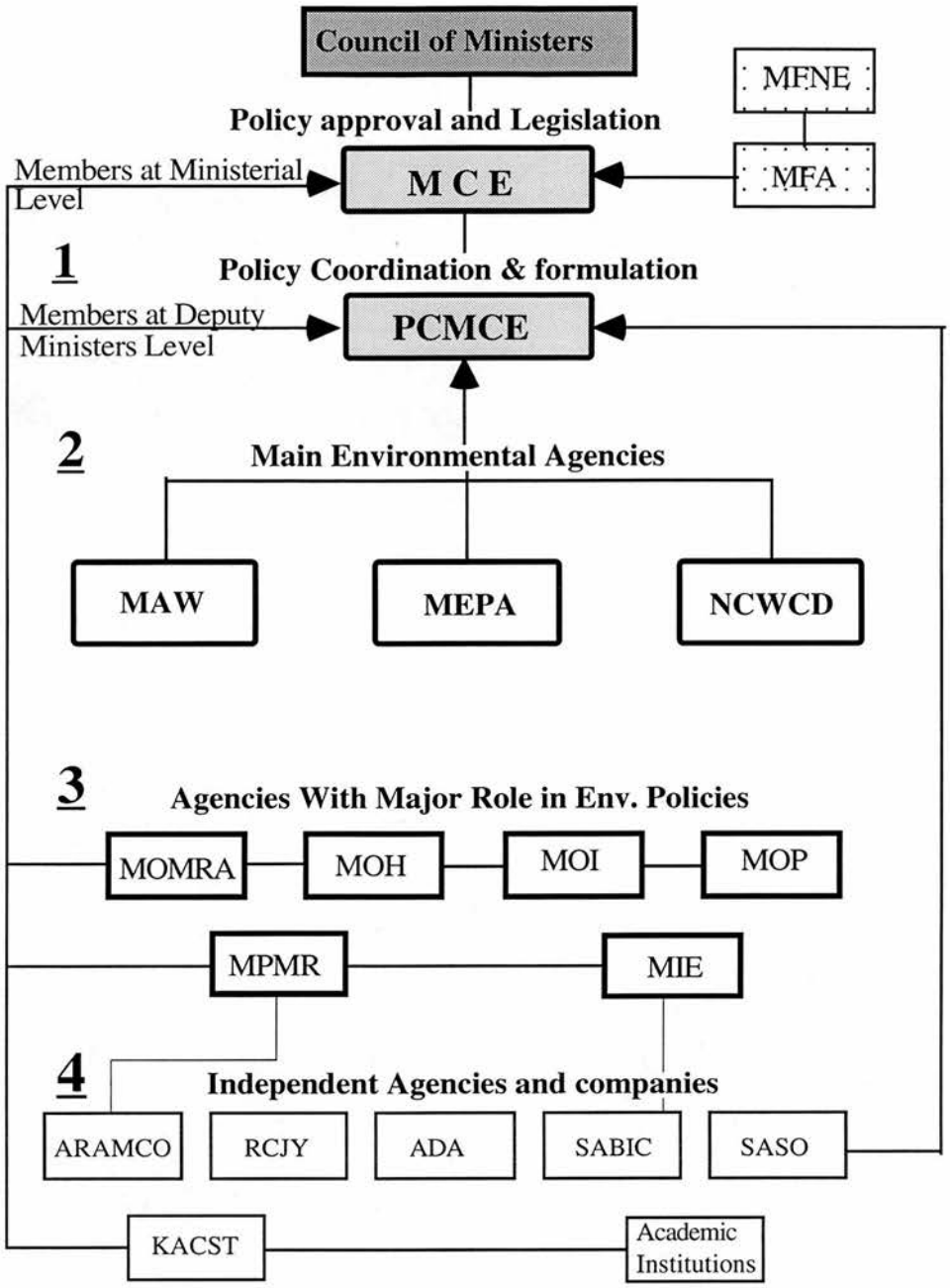
The process in the case of M/12 took about five years and eight months since its submission by H.R.H. Prince Saud Al-Fisal the managing director of NCWCD, for approval to the Council of Ministers, in 23/2/1410 H. The Royal Decree was issued in 26/10/1415 H. (Fig. 5.2 shows the process of environmental decision making in Saudi Arabia)

5.3.2 Categories of Environmental Institutions and Agencies

The administrative configuration in relation to environmental issues in Saudi Arabia can be classified into four categories. The first is policy formulation and coordination committees. Main environmental agencies forms the second category, while the third category consists of ministries with a major role in environmental policies and implementation. The fourth category consists of independent government agencies and corporations. This categorization is based on the scope of activities and the role played in formalizing environmental policies in addition to administrative rank and membership in PCMCE and MCE.(See Fig. 5.3) These categories are as follows:

1- Policy formulation and Committees for environmental Coordination

Governmental bodies within this category are involved in formalizing policies, and coordinating environmental activities of all agencies and ministries involved with environmental issues. This category is headed by the Council of Ministers **CM**, which as discussed in chapter four is the legislative and executive authority in the country. All environmental policies and legislation are submitted to the Council of Ministers for approval by the involved agencies and ministries, after the approval of the Ministerial Committee for the Environment **MCE**.



MCE: Ministerial Committee on the Environment. **PCMCE**: Preparatory Committee for MCE. **MAW**: Ministry of Agriculture and Water. **MEPA**: Meteorology and Environmental Protection Administration. **NCWCD**: National Commission for Wildlife Conservation and Development. **MOMRA**: Ministry of Municipal and Rural Affairs. **MOH**: Ministry of Health. **MOI**: Ministry of Interior. **MOP**: Ministry of Planning. **MPMR**: Ministry of Petroleum & Mineral Resources. **MIE**: Ministry of Industry & Electricity. **MFNE**: Ministry of Finance and National Economy. **MFA:** Ministry of Foreign Affairs. See the text for category 4 abbreviations.

Figure 5.3. Categories of Governmental Agencies and Ministries Involved in Environmental Policies

Source: Compiled by the author

The members of MCE committee are at ministerial level and chaired by H.R.H. Prince Sultan, the Minister of Defense and Second Deputy Premier. All agencies and ministries involved in environmental policy making are represented at this committee. However, most policy proposals and draft legislation are discussed and negotiated by the PCMCE, formaly the EPCC. The members of this committee are at deputy minister level and meetings are chaired by the Deputy Minister of Defense for Civil Aviation H.H. Prince Abdullah bin Fahad.[29] The "National Report to the United Nations Conference on Environment and Development" specified that the president of MEPA is the chairman of EPCC-PCMCE.[30] On the other hand, the "State of the Environment Report 1989" stated that H.R.H the Second Deputy Prime is the chairman of EPCC.[31]

The focal point for evaluating policy proposals is PCMCE. However, some ministries can avoid this route by submitting proposals which they consider not part of environmental policies directly to CM. The role of MCE and EPCC-PCMCE will be discussed later in this chapter. (See Fig. 5.3 for Categories of Governmental Agencies and Ministries Involved in Environmental Policies.)

2- Main Environmental Agencies

The second category of environmental institutions and agencies consists of the following three agencies:

- The Meteorology and Environmental Protection Administration (**MEPA**).
- The Ministry of Agriculture and Water (**MAW**).
- The National Commission for Wildlife Conservation and Development (**NCWCD**).

These three agencies dominate the environmental arena in Saudi Arabia, each with its own mandate and authority. However, as is the case in most countries, rivalry and overlap of activities do exist. MEPA is the main national environmental agency with wide range of authority as specified in the Guide of Duties and Authorities issued by the Higher Committee for Administrative Reform in 1981.[32] This includes environmental surveys and studies; proposing environmental laws; managing and monitoring pollution levels; marine and terrestrial nature reserves; and establishing environmental standards. Since then some changes have taken place, including transferring the responsibility of nature reserves and wildlife conservation to NCWCD, and expanding the role of pollution monitoring especially after establishing the Pollution Response Center (**PRC**) in 1991 and the approval of the National Contingency Plan for Marine Pollution Control (**NCPMPC**) (CM/157 1411 H.) in the same year.

The Ministry of Agriculture and Water (MAW) is involved in a wide range of environmental activities including protection and management of forest and Rangelands; water resources conservation and management; fisheries and marine environment management; and national parks. The National Commission for Wildlife Conservation and Development (NCWCD) was established in 1986 as a response to the increasing threat to native wildlife, especially game animals. Concentrating first on reintroduction programmes of Houbara bustard, an important game bird for Falconers, the commission managed to expand its role to be the main agency responsible for nature reserves and wildlife conservation. It is active in environmental awareness programmes and managed to gain good publicity in the local media. A detailed discussion and assessment of MEPA, MAW, and NCWCD activities and authorities will follow in the next chapter.

3- Agencies with major role in environmental policies

The third category includes all ministries with major role in environmental policy initiation, formulation, and implementation, which are:

- The Ministry of Industry and Electricity **MIE**
- The Ministry of the Interior **MOI**
- The Ministry of Municipal and Rural Affairs **MOMRA**
- The Ministry of Petroleum and Mineral Resources **MPMR**
- The Ministry of Planning **MOP**
- The Ministry of Health **MOH**

All these ministries are members of PCMCE & MCE. The ministry of Foreign Affairs (**MFA**) and the ministry of Finance and National Economy (**MFNE**) are members of MCE, however with little direct involvement in environmental policies. The MFA gives the government's political position especially in regard to international agreements and participation in international conferences. It is worth mentioning that the minister of Foreign Affairs H.R.H. Prince Saud al Fisal is the Managing Director of NCWCD, and he represents the Commission's interests in MCE meetings. MFNE gives government opinion regarding budget allocation for environmental projects and programmes. (See Fig. 5.3)

The Ministry of Industry and Electricity (MIE) is in charge of all industrial activities outside the oil sector, which is dealt with by Saudi ARAMCO. In addition it regulates power production companies. MIE issues licenses for all industrial activities and theoretically has direct responsibility for monitoring any negative impact produced by industrial activities. The authority of MIE does not extend to the two industrial cities of Jubail and Yanbu which are regulated through the Royal Commission of Jubail and Yanbu (RCJY). It is assumed that MEPA environmental

standards are the baseline for pollution monitoring and waste disposal control which MIE applies. However, the ministry does not have the monitoring capabilities to enforce compliance of these regulations. Three departments within MIE are involved in environmental policies: Department of Industrial Cities, Department of Technical Affairs and the Engineering Department. Due to the long delay in approving the Environmental Impact Assessment law proposed by MEPA, the Ministry reached an agreement with MEPA to implement this law mutually. Currently all applications for industrial licenses are required to complete an EIA format through MEPA. This format should be approved by MEPA for the application to receive a license from MIE. If MEPA so recommends, the applicant will submit an EIS which will then will be evaluated and approved by MEPA. However, this process is mainly for formality, as the vast majority of applications are not required to submit a proper EIS. It is estimated that since this process started only 3 out of about 2000 applications submitted Environmental Impact Statement EIS, and those three also were approved.[33] The role of MEPA and related agencies will be discussed later in the next two chapters.

The Ministry of the Interior (MOI), represent the policing power in the Kingdom, all law enforcing authorities are granted to its departments. The main involvement of this ministry in environmental issues is the enforcement of environmental laws especially the hunting law M/26, and Forest and Rangelands law M/22, in addition to participation in all maritime laws such as the National Plan for Marine Pollution Control CM/157, (MOI is a member of its operation committee), and Marine Resources Investment and Conservation Law M/9, through the Coast Guards. Furthermore, the Civil Defense branch of the ministry is responsible for establishing and implementing contingency plans in the case of

natural or man made disasters. However, it is not known if this force is using Risk Assessment in its policy making or as a requirement for safety regulations. Traffic control and management is another field within the MOI scope of work. The ministry established a system of car inspection in 1986 which included a strict measurements of exhaust emissions. However, after the Gulf War and the move to reduce the price of some services the enforcement of this system was reduced and traffic police inspection of valid vehicle inspection tests was cancelled, in addition to relaxed rules in inspections. The Secretariat General of Industrial Security within the MOI is involved in regulating security measures and preventive measure taken by industrial corporations.

The policing authority of MOI ties in with several environmental agencies especially MAW, MEPA, and NCWCD. The coordination between MAW and MOI to enforce M/22 established a precedent in coordinating and establishing codes of practice between environmental agencies and the policing authorities.[34] At regional level the local governments *Emirates* and local police participate in investigating violations of environmental laws especially M/9 and M/22. This coordination between MOI and environmental agencies faces some problems especially with the lack of monitoring facilities and personnel, considering the vast areas which need to be covered.

The Ministry of Municipal and Rural Affairs (MOMRA) is responsible for all municipal activities in the Kingdom. This includes urban and rural communities, in addition to water, sewage and waste disposal. Six Water and Sewerage boards cover the Kingdom, chaired by the local governor *Emir* and directed by MOMRA. At regional and local levels mayors run and coordinate all municipal activities

including collection of waste, public services and environmental health. This last activity deals mainly with licensing, health control of food markets and restaurants in addition to slaughterhouses. Very little attention is given to air and water quality by local municipalities. Further discussion of the role of MOMRA in environmental policies and its relation with other agencies will follow in the next chapter.

The Ministry of Petroleum and Mineral Resources (MPMR) is responsible for the oil sector which is managed mainly by Saudi ARAMCO. The minister is the chairman of boards of ARAMCO, and the ministry is involved in coordinating joint activities between ARAMCO and other governmental agencies, through its technical affairs department. Mining activities which are carried out by joint venture companies are supervised by the ministry. However, no information is available regarding environmental consideration and impact of these activities. With attention given to diversify the sources of national income the government increased investment in the mining sector in the last few years, and several projects are planned for the next development plan. A further discussion and assessment of ARAMCO environmental policies will follow in the next chapter.

The Ministry of Planning (MOP) is the coordinator of all development plans in the Kingdom. Its role involves drafting the five years development plans. As discussed earlier the ministry functions as the secretarial body for the Council of Ministers to collect, classify, and structure policy proposals submitted by government agencies and ministries. This includes environmental policy proposals and programmes. The major part of these proposals goes through the PCMCE & MCE. As discussed in chapter four the MOP have little influence in following the implementation of policy proposals, the same applies for environmental policies.

The Ministry of Health (MOH), is responsible for health care at all levels of policy making, implementation, and the daily operation of health facilities. The ministry structure includes a Directorate for Preventive Medicine, in addition to Environmental Health and Occupational Health sections. Public health services in the Kingdom are deteriorating and more emphasis is given to private facilities and independent services such as those of the Ministry of Defense, the National Guard and the Ministry of the Interior. The NRUN (1992) noted that "in recent years (the private health care sector) began to play an increasingly significant role in the development of health care field."[35] MOH succeeded in the area of immunization and endemic disease control, and its preventive services have lead to a sharp decrease of endemic diseases. The issue of environmental health is given the least attention in the ministry programmes. Very little coverage of this vital issue can be found in local news papers and media coverage. The general public in Saudi Arabia is not aware of health hazards related to increased pollution, waste disposal or contaminated food. The main health care programmes of MOH listed in NRUN did not include any reference to pollution and waste disposal impact on the public health.[36] The ministry laboratories provide the mechanism to inspect imported food products, however, the efficiency of these facilities has never come under independent scrutiny.

4- Independent government agencies and Companies

The fourth category consists of Independent agencies and government corporations with a vital role in environmental issues. With the exception of King Abdulaziz City for Science and Technology (KACST) and the Saudi Arabian Standards Organization (SASO) these agencies and companies are not members of

EPCC-PCMCE or MCE. This category includes: King Abdulaziz City for Science and Technology (**KACST**), Saudi Aramco (**S.ARAMCO**), The Royal Commission for Jubail and Yanbu (**RCJY**), Arriyadh Development Authority (**ADA**), Saudi Arabian Basic Industry Company (**SABIC**), Saudi Arabian Standards Organisation (**SASO**), and Academic Institutions. The interest of some of them are presented through other ministries, e.g. ADA through MOMRA, SABIC and to a lesser extent RCJY(though this body has a strong independence) through MIE, and Saudi ARAMCO through MPMR. (See Fig. 5.3)

S.ARAMCO is one of the largest oil companies in the world. This company is in charge of oil exploration, processing and marketing. The giant corporation has wide authority and complete independence from the national administrative structure and policy making mechanism. RCJY, is an independent commission which planned, constructed and currently manages the two main industrial cities in the country, Jubail and Yanbu. Its authority is wide enough to act as the local government within the boundaries of the two cities. SASO is responsible for setting standards and implementing quality control for both locally produced goods and imported ones. SABIC is another government owned corporation. This huge enterprise consists of several joint venture companies active in the petrochemical industry. KACST, along with other academic institutions, represents the academic branch in the environmental debate. This institution is the national centre for scientific research. It includes the Institute of Natural Resources and Environment (RINRE), and provides funding for environmental research to universities and academic institutions. ADA, is an independent body responsible for coordinating development programmes within the capital city of Riyadh. ADA has a programme for environmental planning and management, and functions alongside the

municipality of Riyadh. Although the authority of this body is limited to the capital city and surrounding areas it is included in this classification due to its strong position within the local government. A further discussion and assessment of the role and activities of Saudi ARAMCO, will follow in the next chapter.

5.3.3 The Environmental Protection Coordination Committee - The Preparatory Committee for the Ministerial Committee for the Environment (EPCC -PCMCE) & The Ministerial Committee on the Environment (MCE)

The Environmental Protection Coordination Committee (**EPCC**) was established in 1979 and began to function in 1981. The establishment of the committee came as part of restructuring environmental agencies which lead to the establishment of MEPA as the main environmental agency. The rational behind EPCC was to make this committee the national coordinator of environmental policies, and to be a transition step for studying and preparing legislation before it is passed to the Council of Ministers for final approval. The duties of EPCC included:[37]

- Studying, and approving MEPA proposals for environmental protection laws, and submitting the approved laws to the Council of Ministers.
- Approving studies and reports submitted by MEPA.
- Approving laws (environmental issues) from all government agencies, and submitting them to the Council of Ministers.
- Approving procedures, which are implemented by specific government agencies.
- Approving the plans, programmes, and projects of MEPA.
- Direct MEPA in the field of environmental studies and data relevant to environmental protection.
- Coordinate environmental activities between government agencies.

The members of EPCC consists of representatives of the following agencies and ministries at deputy minister level or equivalent:

The Ministry of the Interior (MOI)
The Ministry of Petroleum and Mineral resources (MPMR)
The Ministry of Health (MOH)
The Ministry of Planning (MOP)
The Ministry of Agriculture and Water (MAW)
The Ministry of Municipal and Rural Affairs (MOMRA)
The Ministry of Transportation (MOT)
The General Establishment for Port Facilities (GEPF)
King Abdulaziz City for Science and Technology (KACST)
The National Commission for Wildlife Conservation and Development (NCWCD)
The Saudi Arabian Standards Organization (SASO)
The Meteorology and Environmental Protection Administration (MEPA) - Secretary General

The bulk of EPCC's initial mandate indicates that it is a policy committee for MEPA. However, the last point is the most vital, since overlap of authority and rivalry between agencies increased in the 1980's. On the other hand the brief mandate didn't specify the power of this committee i.e. to what extent it can approve or disapprove proposals submitted by government agencies, and the mechanism of evaluating these proposals. It is not also clear if a voting system is applied and if the chairman has any overruling power. The activities of EPCC have largely been controlled by MEPA since its president is the secretary general. Nevertheless, the wide range of conflict of interests in this committee with its thirteen members (including the chairman) managed to stop some important legislation and policy proposals submitted by MEPA. The delay of the Environmental Impact Assessment law is one main example of environmental legislation stopped at this level of decision making. On the other hand, general policies such as those included in the fifth and sixth development plans were approved with less difficulties since they are not obligatory, but considered as policy proposals.

The National Report to the United Nations Conference on Environment and Development NRUN referred to EPCC also as the Preparatory Committee for the MCE.[38] However, it is not clear if the title The Environmental Protection Coordination Committee is still officially valid. Documents obtained from the MCE (in Arabic), used the title "The Preparatory Committee for the Ministerial Committee of the Environment" PCMCE.[39] On the other hand no official document other than that of the EPCC mandate is available to specify the duties of the PC. Therefore, it is assumed that PCMCE maintains the same mandate of EPCC and the only change is the title.

The establishment of the Ministerial Committee of the Environment (MCE) in 1990 was initiated by MEPA and submitted through the Ministry of Defense to the CM for approval. It is assumed that the increasing involvement in international commitments and agreements helped in establishing this committee at a higher level than that of EPCC. The Royal decree specified the function of this committee as:[40]

1- The preparation of the Kingdom's point of view and position in regard to environmental issues at regional and international levels.

2- To specify the Kingdom's position and point of view in the International Conference of Climate, which will be held on 1990.

3- To coordinate and follow the environmental activities in the Kingdom.

This mandate can be interpreted as a reaction to the increasing complexity in international environmental politics, and the attention the government has given to its possible obligation in any international agreements. The main change from the pervious EPCC is that the members of this committee are at ministerial level rather than deputy ministers and it is chaired by the Minister of Defense H.R.H. Prince

Sultan. However, the president of MEPA remained the secretary general. The MCE board consists of:[41]

The Minister of Defense, Chairperson
The Minister of the Interior
The Deputy Minster of Defense for Civil Aviation
The Minister of Finance and National Economy
The Minister of Petroleum and Mineral Resources
The Minister of Agriculture
The Minister of Industry and Electricity
The Minister of Municipal and Rural Affairs
The Minister of Health
The Chairman of King Abdulaziz city for Science and Technology
The President of MEPA- secretary general

After the establishment of MCE the activities of EPCC continued as a Preparatory Committee for MCE (PCMCE). In fact most of the discussions and bargaining are done at the deputy ministerial level, and the final approval is left for MCE meetings which occur once or twice a year. MCE meetings takes a formal form and are chaired by H.R.H. Prince Sultan the second deputy premier and the minister of Defense. The meetings of PCMCE are chaired by H.H Prince Abdullah bin Fahad the assistant minister of Defense for Civil Aviation. Although this position is not related to environmental issues, Prince Abdullah is the official representative of the government of Saudi Arabia in many international meetings related to environmental issues at the ministerial level. The existence of a member of the royal family in PCMCE plays an important role in mediation and reducing conflict between government agencies and ministries. In may cases PCMCE will refer the evaluation of proposals and research findings to specialised committees agreed upon by the members, which takes the process of decision making to the technical staff and expert opinion level. PCMCE meets two to four times a year, and

its meetings are less formal than those of MCE, in fact it is the arena where all rivalry and conflict can be recorded. However, it is fair to say that this committee managed to bring all involved parties to the same table which is a first step to co-ordinate environmental activities in Saudi Arabia.

The Kingdom's position in international conferences takes a major part of the MCE's activities, in addition to reviewing international agreements and declarations and approving local policies and laws. The Secretariat General of the Ministerial Committee of the Environment (**SGMCE**), prepares and co-ordinates the activities of the committee including contacts with environmental agencies and formalising proposals for the government position in international meetings. The SGMCE will prepare a Memo for each topic which needs discussion or approval, and submit it to the committee meetings. Usually the memo will summarise the history of the issue and its main contents, e.g. in the case of international agreements main policies and commitments, and the recommendation and reservation of the environmental agencies will be included. The SGMCE memo also includes recommendation of approval or rejection and a draft MCE decision to be approved by the MCE members. In many cases the memo will be based on decisions and agreements taken by the PCMCE, in addition to comments from various governmental bodies involved or concerned by the proposal. The draft memo will be submitted to the PCMCE for discussion and approval before it is passed to the MCE. It is assumed that the influence of MEPA in preparing these memos is stronger than other environmental agencies, since its president is the secretary general of both PCMCE and MCE. By studying some of the SGMCE memos, it can be suggested that the PCMCE and MCE meetings managed to reduce disagreements and reservations over some international treaties. On the other hand in some cases such as the Biodiversity

treaty, the SGMCE recommended approval but the PCMCE and MCE meetings failed to agree on a decision, due to the disapproval of some members, in this case the MAW.

5.4 Environmental Laws and Legislation

Environmental legislation in Saudi Arabia is the result of the previously discussed political and judicial systems, and it is coupled with the process of environmental decision making discussed in this chapter. This section presents an overview of environmental laws. Furthermore, it reviews three of the main environmental laws currently enforced. Proposed legislations are discussed under the subsection 'proposed Legislation', in addition to the Kingdom's international commitments.

5.4.1 Over view of environmental laws

The discussion in section 5.1 History of Environmental Policies and Legislation, revealed that the first serious step to legislate for environmental issues in the modern state of Saudi Arabia began in 1976 with CM/208, CM/1396, and CM/ 19, which were followed by another string of laws, M/26, M/17, M/22, and M/34. All were initiated and monitored by the Ministry of Agriculture and Water (MAW). It was not until the establishment of MEPA in 1981 that the scope of environmental law took another dimension by establishing the environmental standards (01-14090) in 1982. However, MEPA was not successful in extending its authority to establish environmental laws in the area it is responsible for, mainly environmental standards, waste disposal, and environmental impact. On the other hand it is fair to say that MEPA carried out extensive research in the field of marine environment and proposed a "National Coastal Zone Management Programme" (NCZMP) as part of

its publication "Red Sea & Arabian Gulf-Saudi Arabia: An Assessment of National Coastal Zone Management Requirements-1987" (published in 1989) which was not successful in gaining the needed support from other major players within the environmental policy making process, namely MAW and MOMRA. The "Living Marine Resources within the national water. Fishing, Investment and Conservation law" (M/9 1408 H.) of 1988 again was initiated and is implemented mainly by MAW with minor participation from NCWCD. This law deals primarily with fishing activities, raising the issue of conflict of interest between subsidizing and managing fishing activities, and marine conservation which are both theoretically dealt with by MAW. This conflict of interest will be discussed in the next chapter when examining the activities and authority of MAW.

The Gulf war with its devastating consequences had a strong affect on pushing the issue of marine pollution to the top of the national environmental agenda. In addition to the immediate reaction and cleaning operations, MEPA established the National Response Center for Pollution (NRCP) in 1991, and a National Contingency Plan for Marine Pollution Control (NCPMP) was adopted and approved by the Council of Ministers (CM/ 157 1411 H.). On the other hand the National Commission for Wildlife Development and Conservation (NCWCD), which was established in 1986 managed to expand its authority and activities, by the establishment of series of Wildlife Nature reserves since 1987. Nevertheless, its proposed "Plan to Protect Areas in Saudi Arabia" of 1990, which was prepared in corporation with the IUCN failed to pass through its own board of directors. This comprehensive document contained a national conservation plan aimed at conserving representative habitats of the Kingdom's ecosystem. In 1995 the NCWCD succeeded in passing a law which provides the legal means for its plan to

establish a national system of nature reserves. This law "The Wildlife Reserves Areas" was issued by the Royal decree (M/12 1415 H.) based on the Council of Ministers decision (CM/128 1415 H.) (See Table 5.1 -Section 5.1 of this chapter for lists of major environmental laws issued in Saudi Arabia.)

5.4.2 Environmental legislation Process

The process of environmental legislation in Saudi Arabia is the same as the process of environmental decision making and initiation discussed earlier. (See Fig. 5.1 & Fig. 5.2) The legal side of the process is usually dealt with firstly by the legal department and advisors in the involved ministry or agency, mainly to evaluate the consequent responsibilities which might be carried out by the body responsible for monitoring and implementing the proposed legislation. In addition they provide the legal advice in drafting proposed legislation. The Expert Branch which is part of the CM is the department responsible of reviewing all legislation drafts and its comments carry tangible weigh when preparing the final draft.

5.4.3 Major environmental laws

The following gives a brief review of three currently enforced environmental laws: the Forest and Rangelands Law (M/22 1389 H.) (1979), the National Contingency Plan for Marine Pollution Control (CM/157 1411 H.) (1991), and the Wildlife Reserves Areas Law (M/12 1415 H.) (1995).

1- Forest and Rangelands Law, M/22

This law was initiated and submitted to the Council of Ministers for approval by the MAW in 9/8/1392 H. (1972). It took six years for the Council to approve the proposal by (CM/392 1398 H.), which was followed by the Royal Decree (M/22

1398 H.)[42] The law consisted of six articles, specifying the role and authority of MAW, prohibited acts within forest zones, and penalties. The law specified the minimum area of a forest to be 10,000 Sq. m, and delegated to the minister of A&W the authority to define forest and range lands boundaries in addition to approve any management plans. The law introduced the use of forest rangers, and forest and Rangelands were declared as public land owned by the government. Furthermore, the law introduced the concept of wood cutting, transport, and grazing permits, with this authority delegated to MAW.[43]

In 1979, the MAW issued an executive document as a supplement to M/22, which aimed to elucidate in more detail some of the law's items. This document attempted to set the first steps of establishing more comprehensive management plans for forest and range lands. e.g. Section 2/item 17 suggested that grazing is prohibited (all year round or for specified periods) in fenced reserved established by the ministry; degraded range lands; and areas under rehabilitation programmes.[44] The document established a mechanism for implementing the law including permits for grazing, wood cutting and transport, in addition to commercial investment involving natural resources within forest and Rangelands. Furthermore, it established the creation of forest rangers for the first time to police forest sites, and specified the ministry authority in controlling the use of forest and rangelands given to it by M/22.[45] The same year also marked the coordination between the Ministry of the Interior (MOI) and the Ministry of Agriculture and water (MAW), to enforce M/22 1389 H.[46] M/22 and the executive document has not been modified or reviewed since their issuing dates, and are still the main source of any legal action by the MAW or through MOI to protect natural resources.

The implementation of M/22 came under great difficulties. A senior MAW official admitted that they were not completely successful in implementing this law. The main reason is the severe lack of resources, including financial allocation and personnel.[47] It is worth mentioning that financial allocation was not a problem during the economic boom period, i.e. 1975-1985, and MAW was not able to utilize this chance to establish monitoring stations and invest in personnel training. Currently the Ministry employ 130 forest rangers to monitor grazing activities and wood cutting all over the kingdom, which is a clear indication of the inability of the Ministry to implement this law. On the other hand the ministry succeeded in conserving some forest sites, and with the cooperation of local governments *Emirates* reduced violation of M/22. The severe degradation of forest and rangelands habitat, which was discussed in chapter four, resulted in a special committee formed by MAW, MOI, and MOMRA, to control the increased violation of wood cutting and illegal firewood and charcoal markets. This lead to a sharp increase in wood fire and charcoal prices, though the problem persisted due to the lack of resources to monitor remote wadis where wood cutting takes place.[48] This committee attempted to police the law through checking wood cutting, and transport permits, especially in roads leading to urban centres, a tactic which proved to be relatively successful in reducing illegal markets. The NCWCD with its system of nature reserves, which include grazing restriction, managed to reduce habitat deterioration in several sites especially in the northern regions. The increasing power of NCWCD and the newly issued M/12, might take over some of the duties of grazing control especially in areas declared as wildlife reserves. This will depend on the level of authority conflict between MAW and NCWCD.

2- The National Contingency Plan for Marine Pollution Control "NCPMPC", CM/157

MEPA began its efforts to draft a contingency plan for marine pollution in the early 1980's. The SoE /1984 referred to a draft proposal of this plan, which also included the establishment of a national oil spill response management centre.[49] This draft remained unofficial until a serious disaster occurred during the Gulf War. The disasters of this war reminded the government of the importance of such a plan. In 1991, the Council of Ministers approved the plan by decision (CM/ 157 1411 H.) It consisted of nine Articles as follows:

1- Definitions
2- General policy and goals
3- Level of Response
4- Regional and local Plans
5- Responsibilities
6- Executive measurements
7- Finance
8- The National Committee of Marine Pollution control
9- Issuing Executive Decisions

The goal of the contingency plan was stated as:

> "The establishment of an immediate response system, and coordination of activities to protect the Saudi coast and marine environment from pollution, by utilizing the available regional and international capabilities ...This includes coordinating all available resources such as equipment, personnel, and expertise. The plan aims to propitiate the Kingdom's commitments in regional and international agreements concerning marine environment conservation, in addition to any other related protocols the Kingdom's committed to."[50]

The contingency plan delegated MEPA to coordinate the response activities, including pollution control policies, surveillance and environmental impact research, in addition to the authority to manage and implement the plan. Article 3/b instructed

the establishment of an "Operation Committee" for both the Red Sea and The Arabian Gulf, this committee consisted of:[51]

1- Ministry of Defense (MEPA), area coordinator-Chairman.
2- Ministry of the Interior (border guards, civil defense)
3- Ministry of Petroleum and Mineral Resources.
4- Ministry of Municipal and Rural Affairs.
5- The General Establishment of Ports

The "Operation Committee" was delegated the response activity which included:[52]

- Studying local contingency plans for marine and coastal infrastructures.
- Estimate the needed personnel for each utility and department to facilitate pollution control.
- Supervision and implementation of the Plan.
- The preparation and development of over all contingency plan for each specific area, including group of local plans, and providing the needed resources to deal with pollution control.
- Following up pollution control reports at regional level.
- Estimating and assessing the operational capabilities of pollution control equipment.
- Following up response operations personnel training .
- Taking the necessary precaution to provide the needed medical services for those who might be affected by pollution in coordination with the Ministry of Health.
- Any other duties assigned by EPCC (currently PCMCE)

The same item (3/b) added that "the regional chairman of the Operation Committee will submit a periodical report of the committee's activities."[53] The fourth article listed the activities of regional and local contingency plans, while article 5 specified the responsibilities of the plan activities and implementation.[54]

This task is delegated to all agencies and authorities in charge of any facilities or activities along the coast. Those agencies are:[55]

1- Ministry of Defense (MEPA and The Royal Navy)
2- Ministry of the Interior (Border Guards)
3- Ministry of Petroleum and Mineral Resources (associated agencies and companies)
4- Ministry of Industry and Electricity
5- Ministry of Municipal and Rural Affairs (Coastal cities municipalities)
6- The Public Establishment of Ports
7- Water Desalination Authority
8- Royal Commission for Jubail and Yanbu
9- Any other agency with marine and coastal facilities

The steps of implementation were included in Article 6, which suggested five stages of implementation:[56]

1- Reporting - all responsible authorities of marine and coastal facilities are responsible for reporting any incident of pollution to the Area co-ordinatar or directly to MEPA.

2- Assessment - the area operation committee will hold a meeting to classify the level of pollution, the need for control and cleaning operation, alternative pollution control and cleaning methods, and start the required activities according to the area plan.

3- Containing and prevention procedures - this stage includes the attempt to stop the source of pollution, placement of barriers to protect facilities and sensitive areas, reducing the impact of the pollution, and the use of dispersing materials specified by MEPA.

4- Cleaning and disposal - The local response sites should use the available resources to collect spilled oil or any other harmful materials, and to use the area plan to decide on priorities and locations of disposal.

5- Documentation - The area operation committee should: collect data and relevant documents to establish the responsible source of the pollution incidence; assess the operation activities; estimate the cost of the operation; in addition to the procedure of environmental impact studies. The documentation can include (if possible) photos, film, eye witness accounts, data formats, letters, contracts, field data, samples, lab results, news coverage, and any other communication records.

The suggested structure of the Operation Committee is thoroughly functional, since the implementation of the plan requires the contribution of many agencies and diverse authorities. It is conspicuous that the plan attempted to distribute the responsibility of reporting and response activity rather than confining it to MEPA, which makes the implementation process more flexible and provides wider resources needed for the cleaning and control activities. The suggested 'Area Plan' which was spelled out in Article 4, provides a good guide line and sets a model example for responsibilities delegated to each Area. Furthermore, Article 4/b instructed all involved agencies to establish their own local plans for pollution control within their authority limits in co-ordination with MEPA.[57] What distinguish this plan from other environmental laws is the decentralised concept which aimed to make all involved agencies responsible and accountable rather than placing the whole burden on MEPA. It seems that MEPA realised its limited resources and ability to be the sole authority in pollution control. However, it maintained the co-ordination authority which is indispensable in such operations.

To respond to the foreseen problem of financing such activities, the plan suggested that spending will draw from the allocated items (for NCPMPC) in MEPA's annual budget, in addition to the contribution of each involved agency listed in Article 3/d. However, in urgent cases which can not be financed through local

budgets, MEPA can employ specialised contractors to carry out the needed control activities, after the approval of the MFNE.[58] The plan suggested the establishment of a new committee "The National Committee for Marine Pollution Control" This committee was delegated the authority to review and issue the needed policies to facilitate the implementation of the plan.[59] The committee consists of:

The Ministry of Defense: MEPA (Chairman of the Committee), and the Royal Navy
The Ministry of Interior: Border Guards, Civil Defense, and the Secretary General of Industrial Security
The Ministry of Municipal and Rural Affairs
The Ministry of Finance and National Economy
The Ministry of Industry and Electricity
The Public Establishment of Ports
The Public Establishment of Desalination
The Royal Commission for Jubail and Yanbu

This Plan provided the long needed procedure and authority assignment to deal with oil spill incidents and other marine pollution within Saudi waters. It also established a clear process to penalize the responsible authority for any pollution incidents, which proved to be a good deterrent measure.

3- The Wildlife Reserves Areas Law , M/12

This law which was initiated and drafted by NCWCD, went through the process of environmental legislation discussed earlier, and received approval from EPCC before it was officially sent to CM by the managing director of NCWCD H.R.H. Prince Saud Al-Fisal for discussion and approval. It took the same path discussed earlier through *Majlis Al-Shura* and was approved by Council of Minister decision (CM/128 1415 H.) in 1995. It then received the status of Royal Decree (M/12 1415 H.) in the same year. The law consisted of eighteen items, covering the

process of declaring wildlife reserves, involved agencies, NCWCD authority and duties, management regulations, and penalties.

Item 3/a stated that "the request to establish a wildlife reserve should be studied by a specialised committee formed for this purpose." [60] The members of this committee are MOI, MAW, MFNE, MPMR, MIE, MOMRA, MOP, MOT, NCWCD, KACST, MEPA, and the local government *Emirate* which should represent the concern of the local bureaus containing the proposed site. This committee should submit its study within six months.[61] The conflict of land ownership was referred to in item 3/b which suggested that the reserve area should not overlap with any private and public ownership, or management authority, and the proposed site should be publicly announced for three months before declaring the area as a wildlife reserve.[62] The law granted the NCWCD the authority to propose any reserve area and to specify its boundaries (which have to be approved by the specialised committee). The official declaration should be issued by a Council of Minister decision based on the NCWCD recommendation.[63] The policing power within the reserves area were granted to both the MOI, and NCWCD represented by its rangers.

Item 13 specified acts prohibited within the reserve boundaries, which included:[64]

- Hunting in any form unless it was allowed according to regulations issued by NCWCD
- Wood cutting, grazing, and farming unless authorised by NCWCD.
- harvesting and collection of plant material, disturbance, cutting, removing, picking , or vandalism of living plants within the reserve site in any form.
- Waste disposal in any form.

- Introducing or inflecting any action with negative impact on wild life within the reserve site.

After the failure to pass the "A Plan to Protect Areas in Saudi Arabia" this law enabled the NCWCD to achieve part of its demands. However, the law did not grant it absolute authority. This is clear in item 3/a which suggested the formation of specialised committee to study the request to establish wildlife reserves. The main rival, MAW can introduce many obstacles in the process of approving the boundaries of the reserves, based on the wide authority it maintains in public land ownership. This consideration might be the most difficult to overcome to establish new reserves. The suggestion in item 3/b to modify the boundaries of the proposed reserves in case of any over lap of ownership or the existence of authority conflict confirms the fact that the process can be easily stopped due to any claim of ownership or authority. Considering the complexity of land ownership in the Kingdom, this condition might prove to be a real obstacle. On the other hand, the prestigious position of the NCWCD can often overcome this obstacle. H.R.H Prince Sultan and H.R.H Prince Saud Al- Fisal provide strong support for the commission's activities, which might provide an over riding power, or mediation in some cases of conflicts.

Although the reserves management authority is granted to NCWCD according to item 6, the authority to regulate access and the utilisation of natural resource was not limited to NCWCD, but was granted to NCWCD, MOI, and MAW. This can limit the authority of NCWCD since MAW might have a different attitude to natural resource management, especially grazing control. Policing the law which is granted to NCWCD and MOI, might face different kinds of difficulties, represented by the wide public rejection of such reserves especially within the

nomadic and rural community. The cooperation of the local government which might be in sympathy with the local population is another crucial factor in implementing this law. It is early to assess the success of implementation of M/12. Nevertheless if the NCWCD is not granted a wider authority, the system of wildlife reserves will continue to face great difficulties at both planning and management levels.

5.4.4 Proposed legislations

In addition to the listed laws in Table 5.1 various draft legislation is currently under assessment and debate by the various environmental agencies. This includes the "National Coastal Zone Management Programme", the "Environmental Impact Assessment" regulation, and the "General Law of the Environment" which aims to establish the framework for environmental activities and regulation in the Kingdom. This proposed law, which was first referred to in SoE/84, is currently in its third draft and the debate over it still continuing.[65] MEPA, the driving power behind this law is pushing to gain approval for its proposal, even if they have to dilute some items. According to an MEPA official "we have been instructed by the president (of MEPA) to make every possible bargain to pass this law, the most important item of which is the environmental impact regulations"[66], a proposal MEPA has failed to pass since 1985, when it was first submitted to EPCC for approval. The original EIA draft legislation was amended by document (1413-04) in 1992.

The proposed "General Law of the Environment" law consist of six chapters, these are:[67]

1- General principles;
2- Public Authorities Duties;

3- Individuals Duties,
4- Environmental disasters and Contingency Procedures;
5- Authorised Body Duties and Responsibilities;
6- Responsibility and Compensation.

The six chapters consisted of thirty one items. The first item / Chapter one, defined the "Authorised Body" as being the "Central Environmental Agency", this is an indication of future plans by MEPA to be an independent body with wider authorities and higher administrative rank.[68] In general the draft gives a broad and some times ambiguous distribution of authorities. Several issued were included such as EIA, environmental Standards, waste disposal, and marine pollution. The second chapter consisting of "Duties of Public Bodies" stated that:[69]

> "Public bodies will take the suitable procedures to guarantee implementing the roles of this law. This will apply for their projects and projects under their supervision and licensing. This will include compliance with environmental standards and environmental protection procedures and any further executive regulation issued by the authorised Minister."

The second chapter listed what can be defined as areas of concern and environmental management activities, this included: Environmental Impact for Projects, Use of Best Technologies, Environmental Education and Awareness, Management of Natural Resources, Issuing Environmental Standards, Land Use and Coastal Areas, Noise Level, Development Planning and the Environment, Current Projects. The wording of each item is ambiguous and do not add any new concern or authority to the more comprehensive "key issues" and policy proposal of the fifth and sixth development plans. The fifth chapter listed the duties and responsibilities of the Authorised Body, which is MEPA or the suggested new "Central Environmental Agency". Once again the list is very brief and does not add to the original MEPA mandate (discussed in chapter six). However, item 28 gave MEPA some authority to demand environmental data from projects which might

cause pollution or environmental degradation. [70] Furthermore, chapter six granted the authorised body wider authority to follow-up implementation and compliance with environmental standards. This included requesting a report on mitigation methods to be used to prevent further breach of regulations, and the right of the authorised body to stop the activity of the violated body for up to six months or the complete closer in the case of repeated violation.[71] As in many laws the authorised minister was granted the right to issue further executive supplements which in most cases details the procedures of implementation.

The structure of the draft legislation is weak and lacks clear goals. It seems it is the result of along process of compromise with other agencies. However, the draft does not change the current conflict and over lap of authority in the environmental field. The authorised body was not given enough authority to regulate environmental conditions and enforce compliance, most importantly the lack of any supervisory and coordination authority to draw up national policies and monitor environmental conditions. Considering its long history it is not clear if this draft will ever be approved in the near future.

MEPA continue to up date and review its environmental standards, in addition to drafting new legislation including the "National Chemical Safety Program", and the "National Plan for Sewage disposal", MEPA is currently revising its Water Quality Standards.

5.4.5 International Commitments

Considering its location The Kingdom of Saudi Arabia has several levels of regional and international environmental commitments. The Gulf Cooperation

Council (GCC), which consists of Saudi Arabia, Kuwait, Oman, United Arab Emirates, Qatar, and Bahrain, form the immediate regional level. This Council is aimed to form a political unity between the member states, unification of laws and regulations is part of this unity, and includes coordinating environmental activities at regional level. The GCC Regional environmental policy agreement of 1986, was a major step in formalising regional environmental policies. The Regional Organization for the Protection of the Marine Environment (ROPME), and the Kuwait Regional Convention for Development of the Marine Environment from Pollution of 1978 are another result of regional agreements within the Gulf area. In 1989 a protocol on Marine Pollution in the Arabian Gulf Region was agreed upon by the concerned countries. The second level of regional commitments is the Red Sea and Gulf of Aden region, involving another group of countries including Yemen, Egypt, Sudan, Ethiopia (later Eritria), and Djibouti. The result of this joint coordination was the Regional Convention for the Conservation of the Red Sea and Gulf of Aden in 1982, and the establishment of the Organization for the Protection of the Environment of the Red Sea and Gulf of Aden (PERSGA). The activities of such organizations are subject to political satiability in the involved countries, in addition to regional political conflicts. The third level of international commitment evolved around the Arab League. This regional body contains all twenty two Arab countries in both Asia and Africa. The fourth level includes international treaties and agreements, such as the United Nations Convention on the Law of the Sea (1982), and the Basel Convention for the Control of Transboundry Movement of Hazardous Waste and their Disposal (1989).

The commitment to some international declarations can face some reservation from environmental agencies in the Kingdom, in addition to cultural,

religious, and national security considerations. The Minister of Petroleum, who chaired the Kingdom's delegation to the Earth summit placed reservation on the eighth and sixteenth principles of the Rio declaration which recommend the encouragement of suitable demographic policies and the use of economic instruments to control pollution. The attitude to reduce the use of fossil fuel cannot be supported by the Kingdom, since oil is the main source of national income. However, the MCE later recommended the unconditional approval of the Rio declaration.

5.5 Concluding Remarks

The discussion in this chapter presented the history and process of formalising environmental policies in the Kingdom of Saudi Arabia. It showed that the government attempted to address environmental problems by establishing a central environmental agency, MEPA, in addition to legislative efforts to constitute a comprehensive set of environmental laws. This effort is faced with several problems, including the inconsistency of policy proposals and failure to implement the proposed policies, such as those of the fifth development plan. Development plans proved that the various agencies with the help of the MOP are able to structure a reasonable concept of national environmental policy, however, they were not able to formalise and agree upon the legislation of supportive laws and the implementation of policies, plans and programme proposals.

There is a gap in governmental documentation in relation to environmental qualities and conditions. The existence of only one comprehensive State of the Environment Report is evidence of the inability of MEPA to carry out one of its main duties. On the other hand the NRUN-1992 was a good joint effort resulting

from international environmental politics. This indicates that such documents can be produced if there is enough political pressure. The regular issuing of state of the environment reports is of vital importance. These should aim to educate the public about environmental conditions and health. They will also be of great help to the government when reviewing policy proposals and drafting new laws.

The discussion of administrative structure and environmental policy making indicated that the establishment of EPCC and later PCMCE-MCE helped in bringing together all involved players to one table which facilitated the process of environmental policy making. However, these coordinating bodies also became a place of conflict and power struggle, where each agency sought to maintain and if possible expand its authority. This resulted in disrupting the process and in some cases blocking important policies and legislation. The problem can be attributed to the lack of decisive authority in the process, as all major agencies have similar ranks, or the political power to counter attack any effort to reduce their authority. The fourth category of environmental agencies and institutions which consist of independent agencies have the advantage of an independent policy making process, and consequently can distance themselves from the authority conflicts which hinder the main policy makers. Agencies like ARAMCO, and RCJY have managed to establish their own environmental policies and management programmes which will be discussed in the next chapter.

The efforts to establish environmental laws in the Kingdom has been relatively successful, although the enforcement faced some serious problems. However, these efforts are not entirely comprehensive, and several areas yet need to be covered. The failure to pass the Environmental Assessment laws is a striking

example of a long over due law stopped by authority conflicts in the policy making process. It might take another environmental disaster such as that of the Gulf War for this important law to be officially adopted.

Within the context of the Saudi political culture the involvement of Royal family members can help in reducing agency rivalry. The participation of Royal family members in environmental issues, especially as patron of a specific activity, can help in attracting more media coverage and possibly financial support from the government.

The next chapter will focus on the main environmental agencies, MEPA. MAW, and NCWCD in order to discuss their mandate, authority, and assess their activities, in addition to conflicts and overlap with other agencies. The role and activities of major players in environmental policy mainly, Saudi ARAMCO, and to a lesser extent MOMRA and RCJY, will be investigated and assessed, in addition to the role of non governmental agencies. Environmental awareness and public involvement will form part of the chapter including the activities of the Saudi Environmental Awareness Project (SEAP).

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[1] The late King Abdulaziz encouraged the settlements of nomadic tribes in small villages called *Hijar*. This policy strongly changed the traditional desert life and concentrated pressure on natural resources, in addition to abandoning traditional norms of sustainable resource management. For more information regarding the *Hijar* concept and urbanization policies of Saudi Arabia see Al-Ankary, K. & El-Burhra, S., (ed.) **Urban and Rural Profiles in Saudi Arabia.** Berlin, Germany: Gebr. Borntrager, 1989.

[2] Access to governmental documents was in some cases difficult, the discussion of policy documents is based on the available documents at the time. It is possible that other documents do exist but were not available to the author, for example a classified report prepared by the World Bank dealing with environmental policies and institutions. Child & Granger (1990) listed an unpublished 1985 State of the Environment Report in their bibliography.

[3] MCE, 1992. Appendix 2., p.1.

[4] MOP, **Third Development Plan.** Riyadh, Saudi Arabia: MOP, 1980. quoted in SRI, 1984. p. I-1.

[5] MOP, **The Fifth Development Plan.** Riyadh, Saudi Arabia: MOP, 1990. Quoted in Ministerial Committee for The Environment (MCE), **National Report to the United National Conference on Environment and Development.** Saudi Arabia: MCE, 1992. Appendix A p. 1.

[6] Ibid., p. 2.

[7] Ibid., pp. 2-3.

[8] Ibid., pp. 3-4.

[9] Ibid., p.3. emphasis added.

[10] Ibid., pp. 6-7.

[11] Ibid., p.7.

[12] MOP, **Sixth Development Plan.** Riyadh, Saudi Arabia: MOP, 1995. p. 430.

[13] Ibid., p. 101.

[14] Ibid., pp. 410-411.

[15] Based on the information and documents made available by MEPA to the author

[16] SRI, 1984. p. ES-12.

[17] MEPA, 1989a, p.3.

[18] MCE, 1992. Appendix 2, p. 1.

[19] Another tittle was given in the inner cover "A System Plan for Protected Areas for Wildlife Conservation and Sustainable Rural Development in Saudi Arabia"

[20] Interview, **MAW Official 2.** Riyadh, Saudi Arabia, June/1995.

[21] MCE, **Meeting Agenda of The Preparatory Committee for the Ministerial Committee on the Environment.** (in Arabic) Jeddah, Saudi Arabia: MCE-MEPA, 16/4/1413 H. -1993. Appendix 1. pp. 2-3.

[22] Ibid., p. 3.

[23] MCE, 1993. Appendix 1. p. 5.

[24] MCE, **Agenda 21 -Saudi Arabia.** Saudi Arabia: MCE, 1995, p. 1.

[25] Ibid., p. 7.

[26] Ibid., p.24. emphasis added.

[27] No access was available to find out the mechanism of deliberation over environmental issues. The above assumption is based on the duties and authority of the *Majlis*. In the case of the Wildlife Reserves Areas law (M/12 1415 H.) the Royal decree referred to *Majlis Al-Shura* decision No. 10/9/14 on 26/12/1414 H. without reference to the recommendation of the *Majlis*. Which can be assumed as a recommendation for approval.

[28] For example in 12/3/1415 H. the council discussed the report of the SHC regarding the proposed law of "Trade in endangered species and its products" which was proposed by NCWCD. See Al-Nadwah news paper, "The eighth regular meeting of *Majlis Al-Shura*" (in Arabic) Makkah, Saudi Arabia: Al-Nadwah, No. 11165. 13/3/1415 H. p.4.

[29] Interview , **MEPA Official 2.** June 24/95, Jeddah, Saudi Arabia.

[30] MCE, 1992, p. 77.

[31] MEPA,1989b. p.11.

[32] The Higher Committee for Administrative Reformation (HCAR), **Administrative Structure and Guide of Duties and Authorities of MEPA.** In (Arabic) Riyadh, S.A: Institute of Public Management, 38/3, 2/6/1401 H. 1981.

[33] Interview, **MEPA official 1.** Jeddah, Saudi Arabia, May /1995.

[34] See MAW & MOI, **Meeting Agenda, Minister of the Interior and Minister of Agriculture and Water.** (in Arabic) Riyadh, S.A: MAW, (1389 H.) 1979.

[35] MCE, 1992. pp. 59-60.

[36] Ibid., p. 60.

[37] HCAR, 1981. p. 2.

[38] MCE, 1992. p. 77.

[39] MCE, 1993. p. 2.

[40] The Royal Court, **Approval to Establish the Ministerial Committee on the Environment.** Riyadh, Saudi Arabia: The Royal Court, 14/4/1410 H. No. 5/B/5625, 1990. p.1.

[41] Ibid., p. 1.

[42] MFNE, **The Forestry and Rangelands Law. CM/329 18/4/1398 H. - M/22 3/5/1398 H.** (in Arabic) Riyadh. Saudi Arabia: MFNE, 1979. p. 5.

[43] Ibid., pp. 7-8.

[44] MAW, **The Executive Document for the Forest and Rangelands Law CM 392- M/22 1389 H.** (in Arabic) Riyadh, S.A: MAW, 1399 H (1979) p.4.

[45] Ibid., pp. 1-5.

[46] MAW & MOI, 1979.

[47] Interview, **MAW official 2.** Riyadh, June 1995.

[48] Ibid.,

[49] SRI, 1984. pp. III-6 - III-7.

[50] MEPA, **The National Contingency Plan for Marine Pollution Control, CM/157.** (in Arabic) Jeddah, Saudi Arabia: MEPA, 1991. p.1.

[51] Ibid., p.2.

[52] Ibid., pp. 2-3.

[53] Ibid., p.3.

[54] Ibid., pp. 4-7.

[55] Ibid., p. 3.

[56] Ibid., pp. 8-9.

[57] Ibid., p. 5.

[58] Ibid., p.10.

[59] Ibid., p. 11.

[60] SGCM, **Wildlife Reserves Areas Law (CM/128 26/10/1415 H.),** (in Arabic) Riyadh, Saudi Arabia: SGCM, 1415 H. (1995) p. 1.

[61] Ibid., p.1.

[62] Ibid., pp. 1-2.

[63] Ibid., p. 2.

[64] Ibid., p. 3.

[65] Interview, **MEPA Official 2.** 1995.

[66] .Interview, **MEPA Official 1.** 1995.

[67] The available draft of the proposed law has no date. It is assumed that it is a 1995 draft.

[68] MEPA, **General Law of the Environment.** in (Arabic) Jeddah, Saudi Arabia: MEPA, (draft) No date, p. 2.

[69] Ibid., p. 6.

[70] Ibid., p. 15.

[71] Ibid., pp.- 16-17.

Chapter Six

Environmental Institutions and Awareness

Introduction

This chapter will describe and discuss the status of environmental institutions in Saudi Arabia. It consist of five section, the first one covers Main environmental institutions namely; Meteorology and Environmental Protection Administration (MEPA), National Commission for Wildlife Conservation and Development (NCWCD), and the Ministry of Agriculture and Water (MAW). The second section reviews major players and independent bodies, this includes; Ministry of Municipal and Rural Affairs (MOMRA), Saudi Aramco, and the Royal Commission for Jubail and Yanbu (RCJY). Non Governmental Organizations (NGO's) are discussed in section three, while the fourth section consists of a review of the public role and environmental awareness. Concluding remarks forms the fifth section.

6.1 Main Environmental Institutions

The discussion in chapter five classified agencies involved in environmental issues into four categories. The following section will discuss and assess the authorities and activities of the second category "Main Environmental Agencies", namely MEPA, MAW, and NCWCD. The discussion will emphasis the duties and mandate of each institution; the administrative structure, in addition to their activities and programmes. Their relation with other agencies and ministries will be investigated including the overlap of authority and any conflicts.

6.1.1 Meteorology and Environmental Protection Administration (MEPA)

The establishment of MEPA was based on the decision by the Higher Committee for Administrative Reformation (HCAR) No. 86, on 20/8/1399 H. (1979). This decision delegated the duties of environmental protection to the Meteorology Department which is part of the Ministry of Defence (MOD) and changed its name to the Meteorology and Environmental Protection Administration (MEPA).[1] A Royal Decree (7/M/8903) granted the new body its official status.[2] The duty to prepare the administrative structure of this new agency was delegated to HCAR which issued the "Administrative Structure, Mandate, and Duties of MEPA" in 2/6/1401 H. (1981). This document stated that the Administration in addition to its pervious meteorological activities will conduct the following:[3]

- Conduct environmental surveys to define problems and recommend environmental standards and measures.
- Recommend protection regulations and measures dealing with environmental problems.
- Recommend practical measures necessary to deal with emergency situations affecting the environment.
- Assess existing environmental pollution levels and future variations (such information to be documented for easy retrieval)
- Establish environmental standards and specifications for pollution control and environmental protection in a definite and stable form to be considered by the appropriate authorities when issuing permits for industrial and agricultural projects which may have an environmental impact.

1- Administrative Structure

MEPA structure included three main branches: (See Fig. 6.1)

- **General Directory for Environmental Protection (GDEP)**
- **National Environmental and Meteorological Centre (NMEC)**
- **Administration (AD)**

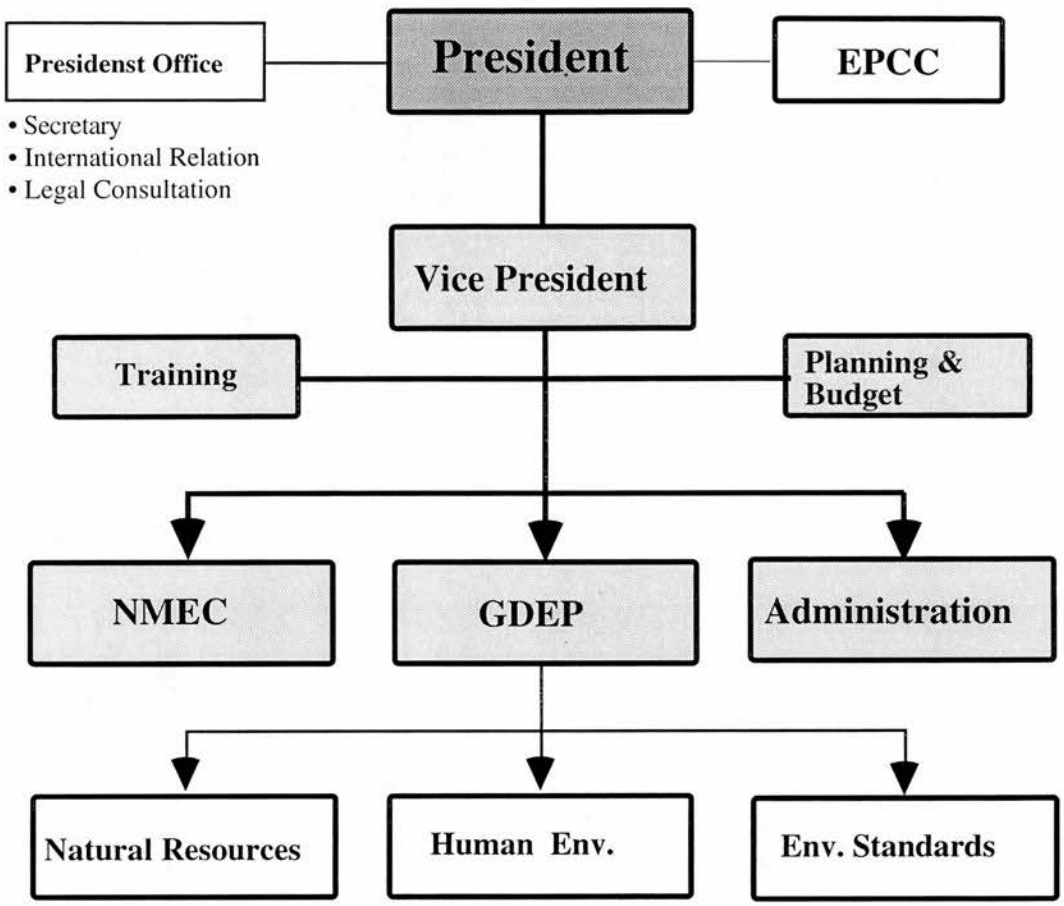


Figure. 6.1 MEPA Administrative Structure - 1981

NMEC: National Meteorological and Environmental Center.
GDEP: General Directorate of Environmental Protection.
EPCC: Environmental Protection Coordination Committee.

Note: Departments under NMEC and Administration are not shown.

Source: Adopted from HCAR, **MEPA Administrative Structure.** (in Arabic) Riyadh, Saudi Arabia: Institute of Public administration-HCAR, 1981.

In addition to the Training Department, there is a Directory for Planning and Budget, and the President's Office. The duties of this office included international relations and legal consultation. The Administration (AD) authority included financial activities, employment, administrative communication and a computer centre. Each of the three main branches is headed by an administrator at general manger rank. (See Fig. 6.1 for MEPA Administrative Structure). NMEC was delegated the duties of "preparing and issuing environmental and meteorological forecasts and periodical reports according to the needs of beneficiary sources."[4] The Centre consisted of four departments:[5]

- Research, analysis, and forecast.
- Meteorology.
- Monitoring and methods.
- Regional management.

The GDEP was delegated the responsibility of issuing environmental standards and maintaining their implementation, assessing environmental conditions, and proposing the necessary environmental policies to protect and enhance environmental conditions, especially in the following fields:[6]

- Prepare and recommend environmental quality standards, pollution source standards, and the necessary implementation procedures for their application.
- Submit reports on environmental impacts of major projects in the Kingdom.
- Provide assistance and technical advice to those engaged in industrial and agricultural activities to enable them to comply with environmental standards.
- Submit reports on the state of the environment and follow up on the application of environmental standards and their effects.

The HCAR document suggested that GDEP would consist of three departments: Environmental Standards (**ES**); Human Environment (**HE**); and Natural Resources (**NR**). The following lists the duties of the three departments:[7]

Environmental Standards Department (ES)

- The continuous follow up of environmental problems and mitigation used in other countries, in addition to any new environmental standards and monitoring techniques, in order to evaluate their suitability for application in the Kingdom.
- Proposing environmental standards and monitoring techniques for pollution sources at regional and national level.
- Proposing the necessary studies and research work to develop and formalise environmental standards.
- Studying the economic impact of environmental standards and pollution control mitigation, and proposing suitable solutions, taking into consideration the economic consequences in addition to environmental impact. The Department would also carry out the following duties in these fields.

1- Environmental Research:

- Conduct research in methods and techniques of environmental analysis and air, water, sound, pollution control, in addition to solid waste disposal.
- Prepare a complete set of environmental standards, and evaluate impact on human heath and ecological balance.
- Prepare a programme of future research work to facilitate the activities of MEPA.

2- Environmental Information:

- Locate and assemble a complete data base of environmental information (air, water, and terrestrial)
- Manage and operate environmental analysis laboratories.

3- Assessment and Follow up:

Monitoring industrial activities to ensure compliance with environmental standards. This requires the following:

- Collect data and prepare a short term environmental monitoring programme.
- Collect data supplied by monitoring stations and analyse it in order to assess national and local pollution levels.
- Submit periodical reports on the state of the environment and any violation of environmental standards.

Human Environment Department (HE)

The responsibility of this department is limited to:

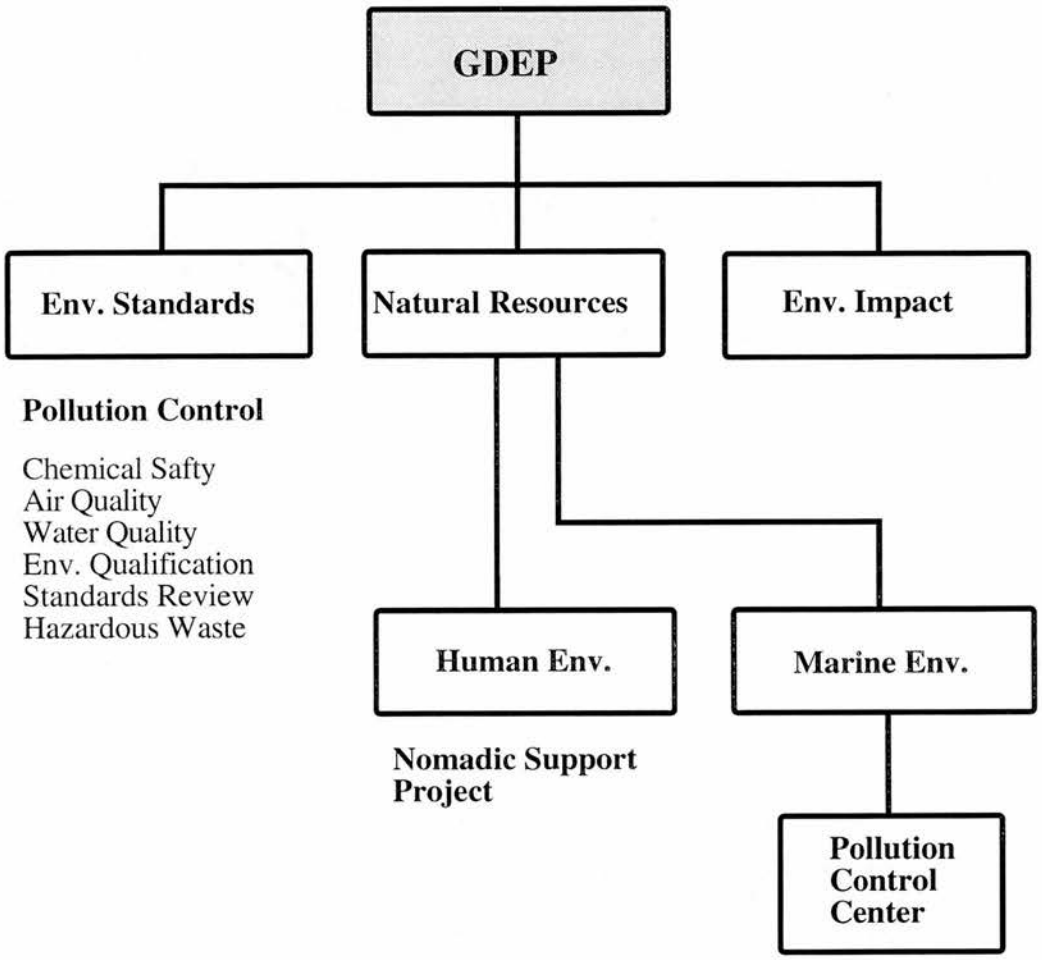
- Monitoring and evaluating reaction to environmental changes in the human environment and settlement .
- Proposing needed solutions to harmonise human environment with environmental conditions.

Natural Resources Department (NR)

Responsible for:

- Studying and assessing pollution impact and unregulated activities (from environmental point of view) on natural resources.
- Proposing mitigation methods to conserve natural resources and maintain ecological balance.

Due largely to the anticipated difficulty in making any official modification, this structure remains in place today, though with several in-house modifications. For example, the Human Environment Department functions under the Natural Resources Department. This was justified by a senior MEPA official as result of limited resources.[8] The main activity of this department is the current project of Environmental Support of Nomads (ESON), which is carried out in conjunction with the United Nations Environmental Programme. New departments emerged with the development of new services. Environmental Assessment used to be under Environmental Standards, now it functions as an independent department, linked to the general manager of GDEP. Marine Environment emerged as another department functioning under Natural Resources. Environmental Standards remained as an independent administration linked to the GDEP general manager. In addition to its activity in developing and reviewing environmental standards, several functions of Pollution Control are organised under these unites: chemical safety, air quality, water quality, hazardous waste. The administration also approves private sector applications to work in the field of environmental services and protection. This activity is the responsibility of the environmental qualification unit.(See fig 6.2 for the current functional structure of GDEP.)



GDEP: General Directorate of Environmental Protection.

Figure. 6.2 Current Functional Structure GDEP- 1996

Source: Compiled by the Author.

2- GDEP Activities and programmes

The present status of MEPA does not match that planned for it. After a strong start the agency dropped back into the trap of limited resources and personnel. To carry out the task of environmental monitoring all over the Kingdom MEPA needed extensive resources and trained personnel. Furthermore, authority conflicts in monitoring and implementing environmental standards hindered MEPA's activities.

The Department of Environmental Standards (ES) consisted of several units (See Fig. 6.2) functioning with minimal staff. No evidence could be found of any serious activity to monitor and enforce approved environmental standards. The officially approved Environmental Standards of 1982 included an article which empowered MEPA to inspect facilities and sites to ensure compliance. It also made any follow-up to implement such standards MEPA's responsibility. Unfortunately despite this official mandate MEPA was not able to undertake implementation of its environmental standards. Suspending permission for industrial, agricultural, or municipal projects had to be carried out by the relevant ministry. MEPA's role in this case would end with their request for the suspension of any violating activity. In many cases their recommendation was not implemented by the relevant authority. To give an example, a MEPA official suggested that sewage disposal within the municipality of Jeddah was not compatible with MEPA standards, and that the municipality and the Water and Sewage Authority were not responding to MEPA complaints.[9] The problem lay in authority struggle and resistance to any recommendation from outside. Furthermore there is a lack of a neutral or higher authority to follow up or implement such recommendations. On the other hand, limited training for staff to carry out inspection of suspected sites adds to the problem. In the mid 1980's MEPA established a series of monitoring stations and accumulated useful data for air and water quality. However, with the exception of a few

cases, such as the Cement Industry, little has been achieved to utilise these data to improve environmental qualities in rural and urban areas. MEPA operate two research centres for meteorological and environmental studies, one in Al-Khobar in the eastern province and the second in Abha in the southern mountains. Both provide environmental data and conduct research within a framework of an international network.[10]

The lack of co-operation with the Ministry of Transportation and Ministry of the Interior to control fuel emission is another set back for environmental standards. Since the late eighties unleaded fuel was promised to be widely available on the market. However, until now (1996) it is not available, and no evidence can be found of a strategy to promote and provide such measures as the compulsory use of catalytic converters to improve air quality. Moreover, no evidence can be found that the relaxation of vehicle inspection tests was assessed or challenged by MEPA. Currently the ES is preparing standards for hazardous waste and chemical safety.

The Department of Natural Resources operates mainly in the field of marine pollution control, which is carried out under the marine environment section and the centre of pollution control. This activity is relatively successful in monitoring and following marine pollution incidents along the coasts of the Kingdom. In co-ordination with the Port Authority and MOI, MEPA have the authority to impose fines and compensation claims for any damage to the marine environment. The National Coastal Zone Management Plan (NCZMP) is one of the products of the department. This management plan resulted from a joint effort with the IUCN. The proposed plan was drafted in 1987, and published as part of the document "Red Sea & Arabian Gulf-Saudi Arabia: an assessment of national coastal zone management requirements", proposing

constructive steps and policy guidelines for protecting the Red Sea and the Gulf coast. This included the recommendation to declare marine reserves in threatened areas. Unfortunately it remained at the recommendation stage, and was not printed until 1989. Marine conservation can be a very complicated issue since several agencies and ministries are involved. MAW is concerned with fisheries, MOMRA control development along urban areas, while MIE, RCJY, and ARAMCO operate industrial and oil production activities including offshore oil fields. This has resulted in a situation where MEPA found it very difficult to pass any proposals dealing with marine protection. The approval of the National Contingency Plan for Marine Pollution Control (NCPMPC) was one of the main successes of MEPA in the field of marine environment. The NCWCD was granted responsibility to protect marine wildlife and habitat, which further complicated the issue. MEPA remains in charge of marine pollution control and monitoring, including its role as co-ordinator of NCPMPC.

Like Environmental Standards, the Natural Resources department is under-staffed and lacks the resources to carry out its duties. According to a MEPA official, the Department is functioning using what he called "Programme Oriented Management" where each programme or activity is given to a group of staff which later can be dismantled to carry another activity.[11] In addition to limited staff, withdrawing active personnel from the departments to work in the president's office deprive the departments from their active and experienced employees.

The Department of Human Environment which is currently functioning under Natural Resources is engaged in a programme for the sustainable use of range lands, the "Environmental Support of Nomads" (ESON). This programme was initiated by MEPA and runs in co-operation with the United Nations Environmental Programme. It is also

approved by the Man and Biosphere Unit in UNESCO. The programme aims to survey range lands and establish databases needed to provide guidance to the nomadic population to utilise natural resources in a sustainable way. Currently a test study area near Hail has been surveyed using field surveys, satellite and aerial photography, in addition to the vital inherited experience of the nomadic tribes. MEPA is preparing the data for use in a GIS model which will be used to provide advice regarding grazing grounds, carrying capacity, grazing intensity, and rainfall forecast. The programme aims also to promote environmental awareness within the nomadic community.[12] From the limited written information and an interview with the Programme Director, it seems that the programme is very ambitious and, if successful, will be a major step towards long awaited environmental management of the fragile desert environment. Furthermore, it will help to sustain the traditional nomadic life. No evidence can be found of any programme within in the Human Environment dealing with the urban environment and its dwellers.

3- Relation with Other Agencies

MEPA is seen by other players in the environmental field as an agency trying to play a bigger role than it is supposed to, and attempting to expand its authority in a way that will deprive them of much of their current authority. As one MOMRA official put it "They (MEPA) are not fulfilling their priorities but are asking to expand their authority."[13] This view is widely shared by officials in MOMRA, and MAW. On the other hand, it is obvious from several cases that these authorities are not co-operating with MEPA. The case of development along Jeddah coast is a clear example of complete ignorance by the municipality of the environmental impact on the highly sensitive marine habitat. Currently, large stretches of the coast north of Jeddah have been developed or are under development mainly as recreational and resort sites.[14] The

municipality gave permission to these project without requesting MEPA's advice on the environmental issues. No department within the Jeddah municipality is in charge of environmental impact. The main consideration is economical and in many cases how influential is the developer. Part of the developed sites were proposed by MEPA in the mid 1980's as a National Park. *Ras Hatbah,* a unique mangrove and bird habitat, is currently under severe stress from resort development. Such cases can be found in several regions, MEPA's position is weak since the EIA law and the National Coastal Zone Management Plan (NCZMP) have not been approved. Even if approved, it is doubtful that MEPA can implement them in such cases due to lack of co-ordination and policing power. MOMRA, on the other hand claim that MEPA also ignore environmental impact and cites the case of the *Theba* cement factory, where MOMRA rejected a proposal to build the factory on a stretch of coastal land because of its impact on the marine environment. Paradoxically MEPA approved the site and found no reason to challenge the development permission.[15] Both MOMRA and MAW are members of committees reviewing MEPA proposals for EIA and NCZMP. In the case of NCZMP, MEPA attempted to avoid the agreed process of decision making by submitting the draft legislation directly to the CM. This step avoided the most difficult obstacles of PCMCE and the MCE. However, the CM decided to form a committee to evaluate the draft. This committee started its work in 1992 and it is still deliberating without any signs of agreement. The problem lies in the position of MEPA claiming the authority to be involved in licensing development activities along coastal areas. The other camp headed by MOMRA and MAW, do not accept this proposal and suggested that MEPA should limit its role to setting the standards and guidelines needed to control coastal development, while implementation is delegated to the relevant ministry. Furthermore, according to some pragmatic officials MEPA's role might also include supervision and assessment of implementation compliance. It seems that several senior MEPA officials

share this view, however, this compromise was rejected by the MEPA president. This dilemma drew attention to an administrative problem within MEPA where it failed to achieve an important responsibility of co-ordinating environmental activities. Since the mid 1980's MEPA has struggled to gain approval for environmental policies and legislation with little success. It is not clear what was the reason behind MEPA's continuing lack of collaboration in such critical legislation. Gaining more authority and increasing the administrative ranking might be one of the reasons.

Relations with NCWCD seem to be more diplomatic. Since its establishment all activities dealing with wildlife, nature and marine conservation have transferred gradually to NCWCD, and MEPA was relieved from a critical issue causing continuous conflict with MAW. Still MEPA takes part in nature reserve issues as the main environmental agency and in some cases opposing reserve proposals mainly due to complaints by the nomadic community.[16] Theoretically MEPA and MIE a have strong link due to the monitoring authority of MEPA. However, as discussed earlier little has been achieved in the area and the agreement to implement EIA is mainly a formality, where no industrial permission has been rejected or seriously evaluated by MEPA.

4- Overview

The general mandate discussed earlier limited MEPA's power to the level of survey and recommendation to protect the environment, in addition to establishing environmental standards. This proved to be a critical factor in the process of implementing and issuing environmental policies and regulations. It is clear that implementing MEPA's standards and recommendations is granted to the "appropriate authorities" which enflamed the present conflict and struggle for authority in the environmental arena. On the other hand, the agency had failed to achieve most of the

listed duties in areas which fell well within its mandate. Out of the four fields designated for GDEP activities, only one has achieved relative success, that is the preparation and recommendation of environmental quality standards. While the other three, including submitting reports on environmental impact of major projects, providing technical advice to industrial and agricultural activities, and submitting reports on the state of the environment and following up the application of environmental standard were minimally, or not achieved. MEPA was successful in establishing scientific data and documenting critical environmental information in the 1980's. This included the publishing of the Saudi Fauna which was later completed by NCWCD. As the official representative of the Kingdom in international and regional environmental meetings a good deal of MEPA senior official's time is given to preparing, attending, and reviewing these meetings. In addition to the problem of limited staff and resources the administration is suffering from poor management.

To overcome this dilemma MEPA needs to be empowered by well defined legislation to monitor and enforce environmental standards. This must be combined with sufficient resources to inspect sites, conduct research, and train personnel. Environmental monitoring must be co-ordinated with other bodies including regional and local authorities, which can include local governments and municipalities. Agency co-ordination is the key factor in any policy implementation, however, clear distribution of authority must be defined and written down especially when it comes to the limit of interference in policy implementation and assessing compliance with regulations.

Despite its continuous effort to gain approval for the EIA, NCZMP, and the General Law of the Environment (GLE), MEPA still needs to accumulate more political support for these indispensable pieces of legislation, however, implementation will

require a well staffed and financed departments. Otherwise it will suffer from the same misfortune as environmental standards. MEPA was not successful in the field of environmental awareness, especially in areas important for the public such as environmental health. Considering the prevailing political culture, environmental health is a sensitive issue, as the government practice is to deny access to information that is available. Thus, impact of pollution on health is rarely or not discussed by the local media. MEPA have no programme to improve environmental awareness at school level and its contribution to TV programmes is minimal. The agency needs to plan a comprehensive programme of environmental awareness aimed to improve public understanding of pollution issues and their impact on the public health. Such a programme should be consistent with local social and religious values and target all age and social groups.

6.1.2 The National Commission for Wildlife Conservation and Development (NCWCD)

The Commission was established in 1986 by Royal Decree (M/22 1406). The initiation to establish such a specialised body came from H.R.H. Prince Saud Al-Fisal, the foreign affairs minister, who has a strong interest in wildlife and falconry.[17] It is assumed that the main concept at the time concentrated on reintroducing game animals mainly Houbara Bustard, which have diminished rapidly in the last thirty years. During the preparation stage the concept was developed into a more comprehensive nature conservation concept, including wildlife research, habitat protection, and a national system of nature reserves.[18] The officially approved goals of the Commission were:[19]

- To develop a comprehensive overview of the existing knowledge on the wildlife and natural environment of the Kingdom of Saudi Arabia.
- To develop and implement plans and projects to conserve wildlife and the wildlife habitat of the Kingdom.

- To establish priorities for wildlife conservation and development in terms of species and sites in both marine and terrestrial environment.
- To devise an overall plan for protected areas suitable for the immediate protection and future reintroduction of wildlife species.
- To conduct research and field surveys on wildlife in Saudi Arabia.

Today after ten years the Commission has managed with various degrees of success to cover all these goals. Several reserve sites and wildlife habitats were established and restored, in addition to increased data on natural environment through field surveys and research conducted by the Commission and sponsored foreign consultants.

1- Administrative Structure

When compared to MEPA and MAW the Commission is structured in a different way. It is an independent body linked directly to the Prime Minister i.e. the King, and has a board of directors chaired by H.R.H. Prince Sultan, the Defence Minister and the Second Deputy Premier. The Board consists of:[20]

H.R.H. The Minister of Defence and Second Deputy Premier- Chairman
H.R.H. The Minister of the Interior
The Executive Director-To be appointed by Royal Decree
The Minister of Agriculture
The Chairman of MEPA
The secretary General of NCWCD
An additional two members to be appointed by Royal Decree for five years.

This item was later amended to extend the board to ten members. The two appointed members in the first board were the chairman of KACST and H.R.H. Prince Khalid Al-Fisal, governor of Asir Region. Later the Minister of Petroleum was included, in addition to H.R.H. Prince Salman Bin Abdulaziz, Governor of Riyadh Region. Both

MAW and MEPA were included as board members. This gave both agencies a good position to influence decision making related to nature reserve boundaries and the authority of reserve management. The Chairman of KACST and the Minister of Petroleum are less influential in reserve issues unless it directly overlaps with their authority. e.g. ARAMCO exploration activity in the Central Region (Al-Hawta oil field) and the Gulf area. The governor of Asir was chosen for his personal interest in wildlife conservation.[21] (See Fig. 6.3 for NCWCD Hierarchy) Although the Board meeting is the formal ground to approve and discuss the Commission plans and programmes, the Board Preparatory Committee deals with details and finalises most of the issues. The Committee is chaired by the Executive Director H.R.H. Prince Saud Al-Fisal and includes: The Minister of the Agriculture, The Minister of Petroleum, The Deputy Minister of the Interior, MEPA Chairman, and the Secretary General of the Commission. It is assumed that the substitution of the Minister of the Interior by the Deputy Minister is mainly for protocol reasons since the Interior Minister is the Uncle of the Executive Director.[22] (See Fig. 6.3 for NCWCD Hierarchy). The Commission enjoys an important position including the ability to raise income from its activities and private donations. Such flexibility is not enjoyed by other governmental bodies such as MEPA or MAW.

According to the commission's first annual report NCWCD consists of the following elements:[23]

1- General Directorate for Financial and Administrative Affairs which supervise offices of personnel, finance, engineering, maintenance, transport and communication.

2- General Directorate for Public Relations and Environmental Awareness. This directorate supervises development of public awareness plans and programmes.

3- General Directorate for Documentation and Information. This directorate supervises the following departments:

a. The National Library and Documentation Centre.

b. Geographic Information Centre.

4- General Directorate for Scientific Affairs. This directorate supervises the following:

a. The National Natural History Museum.

b. Marine Research Unit.

c. Permits and Legislation Unit.

5- General Directorate for Field Research. This directorate supervises the following:

a. Vegetation Cover Development Unit.

b. The Herbarium and the Botanical Garden.

c. Field Studies Unit.

6- General Directorate for National Planning and Protected Areas, which include:

a. National Planning of Protected Areas Unit.

b. Protected Areas Rangers Unit.

Figure 6.3 NCWCD Decision Making Hierarchy

Source: Compiled by the author from several sources.

This structure reflected the ambition of the commission's officials to establish a well structured body for the long term goals of nature and wildlife conservation. The various components of the commission was reflected in its current activities. It is clear that the Commission aimed to tackle the issue of public awareness from the first stage by designating a directorate for public relation and environmental awareness.(See Fig. 6.4 for NCWCD Administrative Structure)

Activities and Programmes

Although covering one side of environmental issues, the Commission is the most active environmental body in the country. Since its establishment the Commission has distinguished itself by a well organised programme of activities and comprehensive plans of nature conservation and wildlife reintroduction, combined with a media campaign to advocate the issue of wildlife protection. The first priority as expected was given to the reintroduction programme of Houbara, which was well financed and aimed to provide game birds for falconry. The "National Centre for Wildlife Research" was establish in 1987 to conduct reintroduction research programmes which focused on Houbara and Arabian oryx, and later included other species. Although the first concept of the Commission seemed limited i.e. providing game animals for falconers, the Commission managed to carry out a comprehensive plan of wildlife research to save several endangered native species. On the other hand it can be argued that the balance of expenditure towards Houbara research did not deserve the priority given to it. The Commission's main activities can be categorised into the following:

1- Reserve Sites and Nature Conservation.
2- Research Centres and Reintroduction Programmes.
3- Environmental Awareness.
4- Support Services.

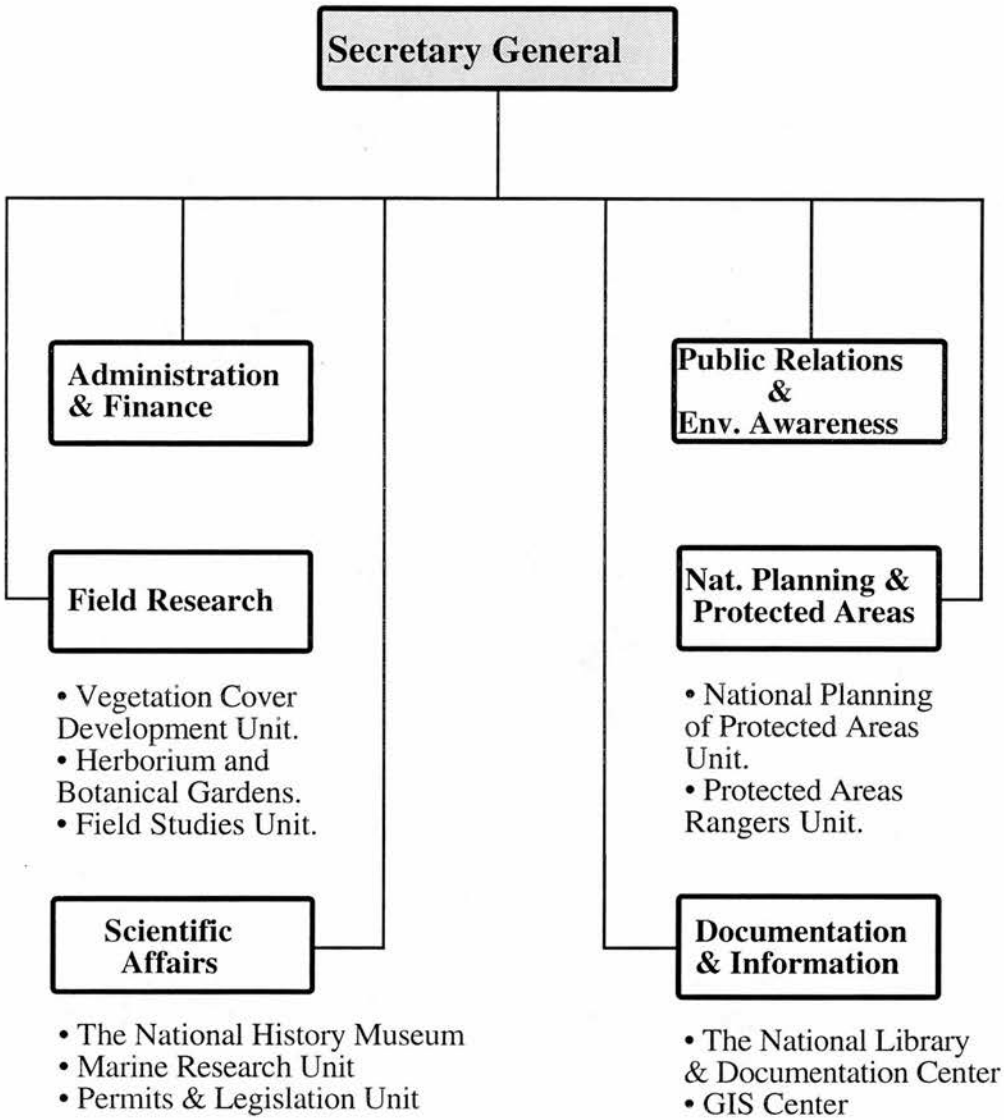


Figure 6.4 NCWCD Administrative Structure

Source: NCWCD, **Annual Report.** 1988. p. 126.

The following briefly discusses these four activities.

• Reserves Sites and Nature Conservation

MEPA must be accredited for initiating the concept of nature reserves. Its preliminary surveys and data formed the basis for the Commission's plans and reserves programme. In its second year the commission suggested a preliminary classification of reserve site into:[24]

Sites in need of immediate protection.
Site in need of environmental survey.
Sites in which the Commission should have a consultancy role.

The last category meant that at the time the Commission was not able to take control of such sites which included some wetlands within the authority of MAW. The first category consisted of four sites, currently three of these sites namely Farasan Islands, Alhumrah, and Ridah are part of the reserve system managed by the commission. The last one, Wadi Jizan, is not. In 1987 the first two reserves Harrat Al-Harrah and Al-Khunfah were officially declared as nature reserves, both in the northern sector and were surrounded by a non-hunting zone managed by the Commission. In 1988 three more sites were declared, Hawtat Bani Tamim, Mahazat Alsayd, and a unique coral island in the Red Sea, Umm Al Qamari.[25] Another three sites were added in 1989 Altubayq, Ridah, and Farasan Islands. In 1993 two more reserves were declared, Majame AlHathab and Uruq Bani Muareth. The last declared reserve is the Gulf marine reserve which was declared in 1996, making the total number of reserves eleven. In 1990 a National plan of protected areas was prepared by the commission and the IUCN. This plan which was discussed earlier (Chapter five 5.2.4) proposed a comprehensive plan for nature conservation and wildlife protection throughout the Kingdom.

Considering the difficulties and complicated procedure to establish nature reserves, the Commission managed in a short time to take comprehensive steps towards its goals. All sites experienced good recovery of vegetation cover and wildlife habitat. On the other hand the social impact of such reserves was noticeable. In all cases, local resident especially nomads, resisted grazing restrictions and letters of complaint were sent to the local government and the royal court.[26] Such resistance resulted in relaxing grazing control in some sites and redefining reserve boundaries in others. However, the Commission with its strong political support, managed to keep good control over most of the declared sites.[27] This was aided by organised monitoring including aerial surveillance and ranger inspection. The public attitude in the rural areas remains sceptical especially regarding their inherited right to graze. On the other hand in urban centres people are not aware of such problems and their only connection is TV programmes promoting the Commission's activities. Still they question the right of access to such sites for recreation. In the case of the Farasan Islands the locals managed to protect the native gazelle for centuries and utilised this resource for the benefit of the residents. Needy families would request permission of the village chief to hunt a specified number for their own consumption. It is not the case now as the Commission prohibits any hunting activity. It must be admitted that the gazelle population dropped in the last two decades from over-hunting. However, this was mainly attributed to hunting by visitors and security personnel stationed on the island, not the native islanders.[28] Prior to 1995 when the reserve law was approved there was no legal right for the Commission to prohibit hunting, grazing or access to its reserves, except the hunting law M/17 (1979) and the Commission mandate which needed supportive legislation. Nevertheless, even with the new law it is expected that whenever there is a chance nomads will attempt to graze and hunt in reserve sites.

The establishment of the northern reserves saved the native gazelles from extinction. The last large herd was cornered in Al-Khunfah and with the enforcement of hunting and grazing control, its population increased. Similarly the ibex and gazelle population in Hawtat Bani Tamim and Farasan gazelles increased noticeably.[29] In other cases the Commission failed to declare threatened wildlife habitats as nature reserves. Hema Al-Fiqrah is a good example. This site is a traditional Hema in the mountains west of Madenah. It was protected for several centuries by the Ahmady of Harb tribe, and contains a good population of ibex and possibly one of the last sites where the Arabian panther can be found. Al-Fiqrah is a good example of authority overlap were MAW is in charge of traditional Hemas; they suggested that the site would be classified as national park, and remain under their authority. Grazing rights, land ownership, and tribal traditions further complicate the case. Considering MAW's poor history of Hema protection and national park management, this might well result in the destruction of vegetation cover and the loss of wildlife, with such signs already apparent.[30]

The other goal of reserve sites is the reintroduction programme of native species bred in the Commission research centres. The main programmes are carried out in Mahazat Al-Said reserve where the first reintroduction of Arabian oryx took place in 1992. The Commission's plan of reserve system aimed to represent all ecotypes in 103 proposed reserve sites with various degrees of protection. Such goals will take a long time to achieve and when considering the resistance to this ambitious plan from other governmental agencies and the public, it is doubtful if it can be achieved unless a radical institutional and legislative transformation takes place.

Marine reserves are part of the Commission's mandate and system plan. Currently Umm Al-Qamari and Farasan Islands are under protection, in addition to the

joint effort with the EU to establish the "Gulf Marine Reserve". The procedure of establishing a nature reserve described in the Reserve Law of 1995 is one of the expected obstacles to expand the reserve system. Hunting control is co-ordinated with MOI, where a combined official announcement declares dates, sites, species, and allowed methods of hunting.[31] It seems that there is no serious authority conflict with MOI in such activity, with the exception of monitoring hunting activities in remote areas.

• Research Centres & Reintroduction programmes.

Currently the Commission operates three centres devoted to wildlife research:

- The National Wildlife Research Centre-Taif.
- King Khalid Wildlife Research Centre-Thumamah.
- Prince Mohammed Al-Sudairy Gazelle Research Centre-Al-Qaseem.

All three conduct research work aiming to reintroduce native species and restore their natural habitat. This includes botanical survey and several experimental replanting programmes. The National Centre was established in 1987 and concentrates on Hubarah breeding in addition to Arabian oryx. The adjacent reserve of Mahazat Al-Said is used for testing reintroduction programmes. Furthermore, the Centre conducts research and breeding programmes on ibex, Arabian gazelle, and wild donkeys in addition to several bird species. King Khalid Centre concentrates on genetic research to classify and preserve native gazelle species, while Prince Mohammed Al-Sudairy Centre deals with gazelle feeding research.

The Commission distinguished itself from other governmental agencies and academic institutions by conducting scientific field surveys aiming to establish scientific databases for the Kingdom's natural environment. The Wildlife Data Base was

established by the Commission and is updated periodically. This activity is built on what MEPA started in the 1980's. A wide range of field surveys are conducted outside the reserve sites. Furthermore, the Commission conducts continuous short environmental surveys mainly to collect data on a specific site or specie.[32] Initiating and organising scientific meetings and symposiums is one of the strong points of the Commission. It is assumed that the Secretary General's background as a university professor of biology strongly influenced the objectives of the Commission and attention was given to establish scientific data and organise study groups with international consultants to enhance the quality of research and work within the Commission.

Reintroduction programmes are executed in several reserves with the most recent in Uruq Bani Moaareth, where sand gazelle and Arabian oryx were reintroduced to the empty quarter. Such events enjoy high profile media coverage and include foreign officials. It is part of the political propaganda to present the Kingdom as an active state in environmental issues.

• Environmental Awareness

Arguably the Commission is the most active body in the field of environmental awareness, however, this activity as expected is limited to its scope of work i.e. nature and wildlife conservation. Their prestigious position gained the NCWCD access to local media including TV, radio, and newspapers. The Commission's activities receive immediate coverage from the media. Furthermore, several TV programmes produced by the Commission were shown on official TV channels. In the past most wildlife TV programmes were imported from foreign producers and covered topics such as African and tropical nature and wildlife. Two TV series were produced, "Man and the Environment" which promoted environmental concerns towards the natural

environment, and "Wildlife Caravan" which promoted the Commission's activities and hunting control. The Commission also pioneered organising Awareness Camps for schools in reserve sites, in addition to school visits and lectures. The Visitor Centre within the HQ in Riyadh is open to school visits and provides a good venue to introduce local habitats and wildlife to the new generation. The Commission organised a training workshop in Environmental Education to discuss methods of awareness programmes and teacher training. This kind of attitude to promote environmental awareness was new in the Kingdom, and combined with the high profile the Commission enjoys made the issue of wildlife and nature reserves widely known to the public. With the new concept of endangered species added to the common vocabulary the Commission can claim some success in improving environmental awareness. Several awareness programmes are under consideration such as a Wildlife Club which is waiting the approval of the CM.[33] The approval of such a concept will depend on the political atmosphere and the degree allowed for public participation on environmental debate. Establishing wildlife societies within schools is another concept which remains at the study stage.[34] In 1995 the Commission established the Wildlife Fund, which provides a venue to collect donation from individuals and the private sector to support the commission activities. Such funds are new phenomena in the Saudi society, the success of such concept will depend on the relation between the commission and the public.

• Support Services

In addition to the main activities discussed earlier several activities and support services are conducted by the Commission. These include the Geographic Information Centre, the library, the Seed Bank, the Nursery, and the National Herbarium. The activity of the seed bank is still in its first stages and a preliminary collection of native species have been collected and stored. The Commission's nursery propagates several

native species which are used in planting schemes in reserve sites. Although some effort has been accomplished in establishing the Herbarium, this field needs more resources which are not yet allocated. To manage and protect wildlife habitat extensive research is needed to study and record native vegetation cover and local plant associations. Such effort by the Commission is the first planned step in the Kingdom in this field. The Commission proposed a Natural History Museum, which currently occupies part of the Visitor Centre.

The management of wildlife exportation and importation was granted to the Commission in 1987. This activity functions within the Permits and Legislation Unit of the Scientific Affairs Department. The Department published a guide of "Trade in Endangered Wild Animals and Their Products" which included the process of issuing exportation and importation permits. Such activity is bound by the international agreement "CITES" of 1973.[35]

3- Relation with Other Agencies

The NCWCD scope of work and authority was included within several governmental bodies mainly MEPA and MAW. Withdrawing authorities caused conflict and rivalry with these bodies. In the case of MEPA, the Commission's plans and activities utilised the work conducted by MEPA especially in the field of environmental surveys and proposals for nature reserves, in addition to marine environment protection which was first advocated by MEPA. In fact some of MEPA personnel were attracted by the Commission, and with its strong political support it looked like the Commission had managed to achieve what MEPA had failed to do. Currently the main overlap of authority with MEPA lies in the marine environment. It seems that the commission is willing to take over the field of environmental marine monitoring to be the main player

in this field. MAW have a strong influence in the same field, where it manages fisheries in addition to operating vital desalination plants. Nevertheless, the main conflict with MAW is the authority to manage reserve sites, traditional Hemas, and pastoral land ownership. The reserve law M/12 included MAW in the decision making process to establish new reserves in addition to the right to be part of any decision controlling access to reserve sites. This should put MAW in a good position to obstruct the Commission's plans and programmes. However, it seems that MAW's opposition will be influenced by the power of the reigning minister.

4- Overview

The Commission managed in the last ten years to establish itself within the environmental arena, the main goal of reintroducing native species began to be a reality. Although the commission can claim success in establishing nature and wildlife reserve programmes, the social impact of such programme is still to be realised. It is noticeable that the speed of establishing nature reserves on which the Commission began is slower now. This is expected specially with the increasing load to manage the current reserves, which stretch the budget to cover ever increasing activities. Nevertheless, it is expected that the Commission will continue establishing new reserves in the next few years, with several in the study stage.

The success of the Commission can be attributed to the personal interest given to it by H.R.H. Prince Sultan and the fact that it is directed by H.R.H. Prince Saud Al-Fisal. In the case of Saudi Arabia such support means that financial support can be guaranteed and most importantly the political power to overcome many administrative and authority struggles which hinder other governmental agencies.[36]

A major contributor to the well planned programmes and activities of the Commission is the Commission's management. It seems that the combination of the political power and efficient management was the basis of success for this Agency. The Commission proved to be the only agency with clear long term conservation goals and a well organised administration to carry out its objectives. In addition to overlap of authority with governmental agencies, the Commission is facing a conflict with the public. The issue of the reserve's social and economic impact needs a comprehensive evaluation and assessment. Public concern must be incorporated in the decision making process. The authority of the Commission still needs to be reviewed, especially to reduce conflict and overlap of authority with other major players.

6.1.3 Ministry of Agriculture and Water (MAW)

Administrating agricultural activities began in 1948 when the Agricultural Directorate was established. Later in 1953 this directorate was upgraded to be a full ministry. MAW has a different administrative status from MEPA and NCWCD. It is a full Ministry, headed by a minister and a member of the CM. Theoretically this places it on a higher rank than MEPA. MAW has a very wide range of duties including: all agricultural activities, water resources and desalination plants, fisheries and marine environment, forestry and range lands management including traditional *Hemas*, and national parks. All these activities have direct relation to the natural environment which makes MAW a dominant player in the national environmental policies. MAW, represented by the Minister has influence over several autonomous bodies including the Saudi Arabian Agricultural Bank (SAAB), which provides long term loans for agricultural projects; the Grain Silos and Flour Mills Organisation (GSFMO); the National Agricultural Development Company (NADC); the Saudi Fisheries Company (SFC); and the General Establishment of Saline Water Desalination.[37]

1- Administrative Structure

The administrative structure of MAW is typical of most ministries in Saudi Arabia, where major directorates are grouped under a vice minister and/or assistant vice minister. In the case of MAW four vice ministers head specialised directorates and activities. These four main sectors are: Agriculture; Fisheries; Research and Agricultural Development; and Water. Each sector is headed by a vice minister, while the General Directorate of National Parks (GDNP) and the Directorate of Land Investment enjoy independent status and are linked directly to the minister.[38] The Agricultural sector includes The Directorate of Forestry and Range lands (DFR), the Directorate of Animal Resources, and the Directorate of Animal and Plant Quarantine, which all have strong input to environmental conditions in the Kingdom. (See Fig. 6.5 for MAW Administrative Structure)

2- Activities and Programmes

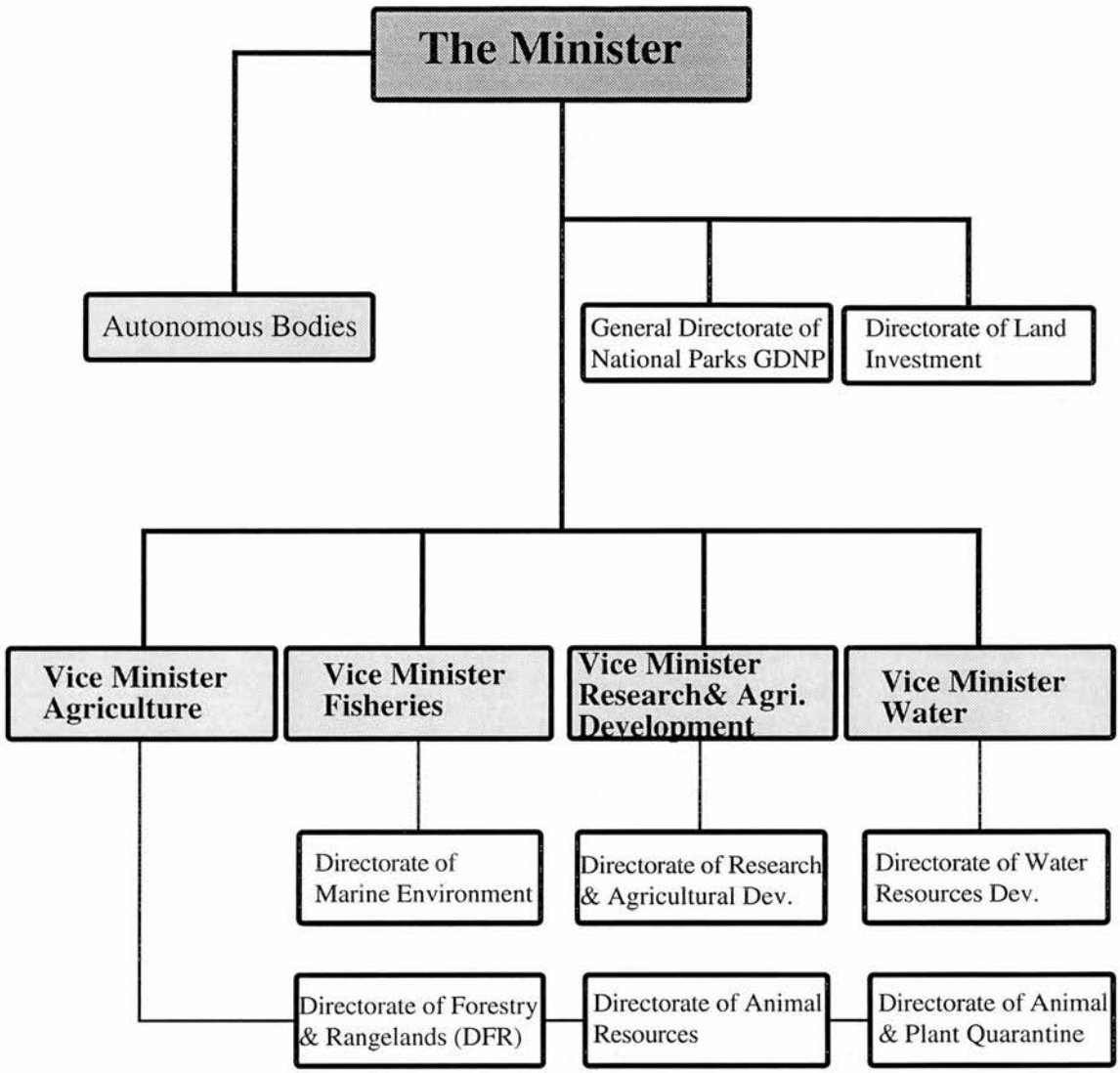
MAW activities cover a wide range of environmental issues, which should make it the major player in the field. However, after the establishment of MEPA in 1981 and NCWCD in 1986 MAW's role was decreased, and with the increasing power of NCWCD it is expected to surrender more authority in the future. MAW's main activities related to environmental policies can be categorised into the following:

1- Forestry and Range lands
2- National Parks
3- Agriculture
4- Water Resources
5- Fisheries
6- Research

The following briefly discusses these six activities.

• Forestry and Range lands

This activity is administered by the Directorate of Forestry and Range lands (DFR). The Forest and Range lands Law M/22 granted MAW the authority to manage and protect forest and range lands all over the Kingdom. DFR supervise the implementation of M/22 and have the responsibility of protecting and improving vegetation cover, such a duty is extremely complex. Although it can be partially attributed to the limited resources of MAW and lack of trained personnel, MAW failed in providing a clear strategy of protecting and managing forest and range lands. The directorate employs 130 rangers for the duty of supervising grazing and wood cutting throughout the Kingdom.[39]



Note: This figure shows only major sectors, in addition to Directorates discussed in the text.

Figure 6.5 Ministry of Agriculture & Water (MAW) Administrative Structure

Source: compiled by the author based on: MAW, **Organizational Chart** 1995. and other sources.

As discussed earlier in chapter four this precious natural resource has suffered form severe stress in the last thirty years and although MAW admits such a problem it has failed to stop continuous deterioration of native vegetation cover. The attitude of DFR towards range management is not clear, no comprehensive data of vegetation cover exists and most of activities are not part of a long term strategy identifying MAW goals and objectives to manage and conserve this resource. In the last ten years MAW attempted to catch up on the long overdue establishment of research programmes concerning natural resources. This activity will be discussed later in this chapter. A MAW publication in 1995 summarised MAW efforts to conserve range lands and forests into the following. (See Box 6.1)

Box 6.1 MAW's Activities in the Forestry and Range lands Sector.

Establishing a data base for forest and range lands (completed in 1983); issuing M/22 and its executive document; establishing DFR; implementing many programmes and projects to protect range lands. This included:

Establishing 24 fenced sites for research purposes, building agricultural dams, importing 18,000 kg of seeds to be planted in depleted range lands, constructing 14 hay storage's, establishing the Animal Resources and Range lands Research Centre in Al-Jouf in 1982, establishing seeds stations, fencing several sites to regenerate vegetation cover, fencing 30 forest sites including reforestation sites for research purposes, employing 120 forest rangers, constructing roads and tracks through the forest for fire combating purposes in addition to providing picnic sites, erecting 850 information signs on forest sites, establishing 30 nurseries, planting schemes in valley sites for sand dune control, 53 reforestation projects since 1966 using 850,000 trees in addition to 11 million trees in sand dune control projects, planting and maintenance projects in some urban centres, conducting awareness programmes for herders and farmers, improving the qualification of DFR personnel.

Source: MAW, **MAW Efforts in Developing Native Vegetation Cover.** MAW, Riyadh: Saudi Arabia, 1995. pp. 7-15.

Most of the planting schemes implemented by MAW used imported rather than native species. A MAW official justified this approach by suggesting that native species are difficult to propagate and it is for the benefit of the people to plant fast growing species.[40] Reforestation activities in the last twenty years suffered from the same attitude, the consequences of such activities are still to be realised and assessed, especially in term of their environmental impact on the local environment and native species. It must be said that recently MAW has begun to realise the severe deficiency in its accomplishments especially when compared to NCWCD, hence programmes to collect native seeds and establishing seed banks to preserve native crops are on the way, but the ability of MAW to conduct such programmes is questionable. MAW was the sole authority for nature conservation for a long time, (though MEPA participated in nature conservation in the 1980's) and during this time very little was done to conserve stressed habitat and ecosystems. During these years when such resources suffered form environmental stresses, MAW failed measurably in preserving native vegetation cover especially in its reforestation schemes and implementing M/22.

Maintaining and protecting traditional *Hemas* is another duty of MAW. Again MAW have no clear understanding of what they are doing. No long term strategy exists to maintain this vastly deteriorating system, in addition to scarce data related to this system.[41] MAW showed no sensitivity to the issue of protecting this traditional conservation system. In the last thirty years the number of traditional *Hemas* dropped considerably, resulting in the loss of native vegetation cover in many sites. The case where MAW was experimenting with planting imported species in *Hema* sites such as *Hema* Sayssead is evidence of the incompetence of MAW's officials. MAW plans to manage traditional *Hemas* are limited to the wish that some sites will be designated as

national parks for public recreation.[42] MAW definition and management of national parks is discussed in the next section.

• National Parks

The General Directorate of National Parks (GDNP) was established in 1983, branching from the DFR, which at the time caused some in-house rivalry. Its establishment came as a result of establishing Asir National Park (ANP) in 1981. This park was the first officially declared national park in the country. It is believed that the initiation of this project came from H.R.H. Prince Khalid Al-Fisal Governor of Asir Region. The study and plan of the park was prepared by a team of planners from the US National Park Service and the US Fish and Wildlife Service.[43] The role of MAW was limited to the local administration. The reality is that ANP does not exist, the only evidence of the highly publicised 4,500,000 ha park can be seen on one master plan prepared by the consultant. The existing so-called National Park consists of several camps and picnic sites along the escarpment. No preservation or conservation programmes exist and the park authority has no authority to control access, grazing, hunting or any kind of development within the boundaries shown in the coloured brochure. In fact the park management faced great difficulties to control vandalism, such as cutting trees or waste disposal within the developed sites.[44] ANP is a good example of MAW technical, administrative, and political inability to be in charge of such a critical task.[45] MAW have no environmental or regional planners working in GDNP. The ensuing lack of support for the park's larger goals is clear, where the interest of MAW officials was limited to creating recreational sites around Abha. Their goals did not coincide with the goals of a national park as they are most fully defined. The Ministry's lack of qualified planners and personnel to establish a clear definition of NP in Saudi Arabia resulted in a distorted understanding of this conservation

classification. Although it is not written in specific words, it can be gathered from MAW publications, activities, plans, and statements to local newspapers that a national park is "A site with recreational potentials, most importantly a good vegetation cover where picnic areas and camp sites can be accommodated". An interview with MAW-GDNP official proved that such understanding is prevailing.[46] This is despite the fact that MAW publications refer to the IUCN definition of NP and the minister's introduction to one of MAW publications stated that "MAW gave utmost attention to animal and botanical life, conserving environmental balance and developing natural resources have extreme priority. MAW established the National Parks as part of its policies to preserve diverse ecological types for the next generations."[47] In reality such statements are not applied in MAW's practices. The poor understanding of what can be designated as a national park led MAW to declare another two sites as national parks. The first is a project of sand dune stabilisation where a large area was planted with wind break trees, the site is currently utilised as recreational site, or a national park as MAW understand it. The second is another planting scheme near Riyadh. In general MAW failed measurably in this scope of work, and a basic restructuring of this directorate is needed if it is to plan and administer national parks.

• Agriculture

MAW administer and control all agricultural activities in the country. It provides loans and technical support for farmers in addition to supervising the use of chemicals. In the mid seventies MAW promoted the use of chemicals in the country to increase food production, though without any effort to evaluate and assess their impact on local environmental and human health. The national Report to the UN Conference on Environment and development-1992 (NRUN) admitted that "there are no reports or documented cases regarding the adverse environmental effects of the chemical residues

to the soil or water contamination, however, the release of nitrous oxide(N_2O) from chemical fertilisers leaves harmful effects on the environment"[48] No evidence can be found that MAW conducted environmental impact studies prior to adopting its agricultural policies, furthermore no EIS is required when applying for agricultural licenses. However, MAW have several regulations to control types and intensity of using chemicals. The long term environmental impact of the use of chemicals in agricultural projects was not part of MAW educational programmes to farmers. MAW admits that there is need to monitor the application rate of fertilisers, pesticides, and herbicides.[49] The main tool to regulate importation and distribution of agricultural chemicals is the MAW sponsored law of Trade in Agricultural Chemicals CM/19, which empowered MAW to administer licensing, distribution and use of agricultural chemicals. A list of prohibited chemicals was prepared by MAW and its personnel conduct inspections of stores and warehouses to enforce CM/19.[50] Organic farming which used to be the main method of farming until twenty years ago, is not advocated by MAW, no long term strategy to reintroduce this concept can be found. Furthermore, no department in MAW provides support or advice for farmers willing to maintain or return to such practices.

Several agencies are involved in administrating the use of chemicals in the Kingdom including MEPA which prepared a National Chemical Safety Program, SASO, which involved setting technical standards of imported and locally produced chemicals, in addition to KACST, which acts as an advisor to the government in such issues. In the last few years MAW has given more attention to this issue and educational leaflets explaining the negative effects of chemicals are distributed in addition to an increasing effort to educate farmers in the proper use of chemicals.[51] The Saudi Environmental Awareness Project (SEAP) played a part in this awareness activity, though it is still in its

first stages and more comprehensive plans for controlling the use of chemicals and evaluating their long-term impact on the local environment is needed. Such plans needs to be supported by a well funded research programme in addition to a continuous awareness programme within the farming community.

The Animal and Plant Quarantine Laws CM/208 & CM/207 granted MAW the authority to regulate this activity. An exportation and importation license is required and theoretically MAW personnel inspect all imported animal and plant material for contamination and diseases. With the limited assessment and scrutiny of such activity, it is difficult to assess MAW's success in implementing both laws. In one case which involved the most valuable native cultivated plant, the date palm, an imported parasite the "Red Beetle" badly affected the national groves in several provinces. It was concluded by MAW that infected exotic palms from Thailand introduced the parasite to the Kingdom. Animal disease was also introduced yet no available official source has documented this.

• Water Resources

MAW proved to be equally ignorant in another environmentally sensitive issue, water resources. The heavily subsidised wheat programme has for instance badly depleted the precious aquifers. No evidence can be found that MAW conducted any environmental impact study prior to initiating this policy. On the other hand the national food security consideration for maintaining the local supply of basic food can be argued, especially with the increasing fashion of international sanctions, which is part of the growing New Leviathan concept discussed earlier. MAW is the authority in charge of providing drinking and irrigation water in the Kingdom. This includes desalination plants along the Red Sea and the Gulf. No evidence can be found of environmental

studies by MAW on their impact on the marine environment. In some cases such as part of Jeddah MAW is also in charge of distributing and managing the local water network.

• Research

MAW research activity is carried out through several research centres including the National Centre of Agricultural and Water Research (NCAWR); the Range lands and Animal Resources Research Centre-Al-Jouf (RARRC); and three Marine Resource Centres (MRC) in Jeddah, Jizan, and Quatief.[52] NCAWR consists of several specialised departments including Agricultural Crops, Plant Protection, Animal Resources and Health. RARRC conducts research into grazing habits and vegetation cover. It aims to establish basic data and to develop management plans for grazing activity.[53] MRC concentrates on fisheries research and intends to establish detailed data for information systems on fisheries-stock dynamics, and associated socio-economic consideration. Such data is still not available and considering the sharp decline in some stocks, especially shrimps, MAW has failed to establish conservation measures to protect such valuable natural resources. NCAWR participated in preparing awareness brochures during the SEAP which included information on environmental and health impact of chemicals, antibiotics and growth hormones used in agricultural activities. This was the first effort oriented to the public in the field. The Directorate of Research and Agricultural Development within MAW co-ordinate research activity and participate in drafting legislation to control seed and plant material importation in addition to the specification of chemical fertilisers used in the Kingdom.

• Fisheries

MAW is responsible for managing all fishing activity in Saudi waters in addition to playing a major part in marine environmental protection. The main legislation

sponsored by MAW in this field was the "Living Marine Resources within National Water, Fishing, Investment, and Conservation Law" (M/9) of 1988. This law granted MAW the authority to control and manage fishing activities in addition to supporting fishermen and sponsoring research aimed to develop this resource. M/9 stated that "MAW is delegated the supervision of all fishing and diving activities and should organise and take the needed measures to develop, invest, and protect marine resources in national waters. It should encourage employment in this field and develop fishing methods in co-ordination with the NCWCD"[54] Marine environment is an area of continuous conflict between MEPA, MAW, MOMRA, and NCWCD.

As a result of the sharp decline of fish stock MAW enforced restrictive measures to limit fishing seasons with "closed season" aiming to increase depleting stock. NRUN (1992) stated that "during the seven-month period from January to July, shrimp fishing is prohibited in the Gulf. Along the Red Sea coast, a similar restriction has been imposed since 1988."[55] Recently these regulations have been relaxed. The involvement of the NCWCD in implementing M/9 should improve the conservation measures adopted by MAW. However, as is always the case, it also may increase rivalry between the two agencies. In the case of MAW there is a clear conflict of interest between sponsoring and subsidising fishing activities and protecting the marine environment. There is no doubt that MAW has faced difficulties in this field especially its failure to manage fish stocks and protect small fishermen from the increasing power of the fishing companies. The proposed National Plan for Coastal Zones Management Plan (NCZMP) by MEPA is strongly opposed by MAW and other agencies; however, if no decisive measures are taken to protect coastal areas and marine resources, fish stock will continue to decline due to increasing pollution levels and destruction of sensitive habitat.

3- Relation With Other Agencies

MAW is the oldest ministry with direct responsibility for the environment. Its scope of work places it in direct conflict with many ministries and agencies, especially MEPA and NCWCD. MAW lost some authority when MEPA was established in 1981 mainly in the field of nature and marine conservation, which brought some rivalry to the scene. This authority struggle was shifted when the NCWCD was established in 1986. Currently the approval of the proposed NCZMP is a major area of conflict between MAW and MEPA. MAW takes the same view as MOMRA that MEPA cannot be granted the sole authority to implement this plan and implementation duties should be distributed between the agencies involved. The same argument goes for the proposed Environmental Impact Assessment Law. Such disagreement is basic and considering that it has been going on for several years, it seems that no solution can be reached in the near future without higher political involvement or major redistribution of authority.

Currently traditional *Hemas* and national parks remain MAW's responsibility, which provide grounds for future authority struggle with NCWCD. MAW officials feel that a major scope of work was withdrawn from them and given to the prestigious NCWCD. However, MAW still holds a key element in reserve declaration and boundary definition, that is the authority to manage all land in the Kingdom that is not owned privately or directly managed by the Ministry of Finance, the other major player in public land ownership. Although MAW placed obstacles in declaring some reserve sites, the political power of NCWCD managed to overcome some of them. The NCWCD involvement in M/9 implementation might indicate that MAW could lose the authority to manage the marine environment to NCWCD. MAW opposed the approval of the international biodiversity treaty which is sponsored locally by the NCWCD and MEPA. In this case MAW, through its membership in the MCE, has managed to

withhold official approval since 1992. The main overlap of authority between MOMRA and MAW is land use classification and water supply to cities and urban centres. On the other hand MOMRA and MAW are on the same side when it comes to opposing MEPA's proposed Coastal Management Plan and EIA law.

4- Overview

The general feeling within MAW is that they have lost a major part of their authority since the 1980's to MEPA and NCWCD, and it seems more is coming in the future. It is fair to say that MAW was successful in sponsoring several legislation which helped in protecting some aspect of environmental conditions despite the limited implementation. However, considering that MAW is the oldest environmental agency in the Kingdom it has failed to achieve tangible results in many fields under its direct responsibility. Natural resource management including: forestry, range lands, water, local crops, fisheries, and marine environment, all suffered from severe destruction and loss of vital habitat. MAW failed in protecting the little and valuable native vegetation cover, and when adding the irresponsible use of imported species at the expense of local ones, the ability of MAW officials and technical staff is in question. Similarly in the case of marine environment, MAW failed to sponsor any comprehensive measures to protect coastal areas from continuous destruction, resulting in permanent loss of valuable marine habitat and consequently a sharp decline in fish and shrimp stock.

In the last few years MAW attempted to catch up in the field of nature conservation. It can be argued it is a move influenced by the extensive media coverage of the NCWCD's activities. However, MAW's constraints remain in the lack of clear goals and objectives combined with the lack of qualified staff and limited resources. Research activities are still in their first stages and more emphasis needs to be given to

this field. On the other hand there is a change of attitude towards the use of agricultural chemicals, though more comprehensive awareness programmes should be oriented towards the public and the farming community. Such changes indicate the possibility of future change in other fields such as national parks and reforestation schemes. In general MAW's authority needs to be revised especially in relation to agency conflict, conflict of interest, and overlap of authority.

6.2 Major Players & Independent Bodies

This section discusses the third category of environmental institutions "Major Players", and the fourth category "Independent Bodies". From the third category MOMRA will be discussed covering briefly its duties, and relation with other agencies. The case of Saudi Aramco as an independent body will be examined, and to a lesser extent the Royal Commission for Jubail and Yanbu (RCJY). Both are independent bodies with their own environmental policies and regulations.

6.2.1 The Ministry of Municipal and Rural Affairs (MOMRA)

The Ministry of Municipal and Rural Affairs (MOMRA) is responsible for all municipal activities in the Kingdom. This includes urban and rural communities, in addition to water, sewage and waste disposal. Six Water and Sewerage Boards cover the Kingdom, chaired by the local governor or *Emir* and directed by MOMRA. At regional and local levels mayors run and co-ordinate all municipal activities including collection of waste, public services and environmental health. This last activity deals mainly with licensing, health control of food markets and restaurants in addition to slaughterhouses. MOMRA have no clear strategy for environmental issues, the Ministry's plans and programmes show no evidence of adopting

environmental principles which in turn are translated into applicable programmes. MOMRA officials admit that this is the situation.[56]

When considering the duty of MOMRA as the main authority in regional planning and city management, it is disappointing to notice the ignorance towards environmental issues. With such wide authority MOMRA can be a major contributor in improving environmental qualities and standards at regional and local levels. Local municipalities give no attention to urban environmental problems, no policies, regulations, or plans exist to monitor and regulate environmental qualities in urban centres. Environmental quality in Saudi cities is deteriorating rapidly and with the failure of MOMRA to adopt and implement protective measures it is expected to continue to decline. MOMRA played a major role in holding up approval for the EIA law and NCZMP proposed by MEPA. In both cases MOMRA had no alternative and as discussed earlier, many urban coastal areas experienced severe stress on marine habitat due to the incompetence of MOMRA (local municipalities) officials. Development along the Jeddah coast is a classical example. Noise is another problem in urban centres where MOMRA have no regulations for this issue. It is not known if MOMRA was consulted when the relaxation of vehicle inspection especially for exhaust emission took place. Such cases which resulted in increasing the numbers of cars and pollution levels fall within the duty of MEPA and MOMRA as the responsible bodies for urban environment.

One of the major problems in Saudi cities is the lack of a comprehensive sewer system, which deprives the residents of a basic human need essential for the public health. MOMRA represented by the Sewage and Water Boards failed in planning and constructing such vital infrastructure. The case of Jeddah where only 30% of the city is

provided with such basic infrastructure resulted in severe high water table problems. Recently a Committee was formed by the regional governor to study the problem.[57] When it comes to waste disposal MOMRA have no clear policy or written regulations to administer this activity. In large cities contractors rather than the local municipalities are the responsible body for collecting and disposing of waste. Land fill is the main method used, though there is no clear policy of disposing industrial and hazardous waste. MEPA is developing standards for this kind of activity, thought it might suffer from the same end result of other MEPA proposals.

The problem of waste disposal in rural areas is more severe where dumping spots litter the country side and increase health risk.[58] A report in Al-Yaum Newspaper investigated the problem in the valleys of Jizan region, a prime agricultural land in the south west of the country.[59] The report referred to the random urban growth on valuable agricultural land, and the uncontrolled dumping of industrial and residential waste in some sites. One citizen interviewed noted that "Wadi Sabya became a place for waste disposal ... some people burn car tires and dump their waste at night ... the responsible authorities must inspect these sites, the police can help the municipality in this activity".[60] Another brought the issue of dumping raw sewage, where he is warred it will pollute the soil and water. The concern for environmental degradation was expressed by one citizen in these words "It disturbs me to see the valley in this condition, it has become a disgusting place. We used to spend nice nights here, and drink from springs and streams running through it, now it is full of garbage and the smell is intolerable."[61] In one case the accusation is directed to the local municipality where it contributed to the problem by dumping municipal waste on wadi Khalab, which is characterised by its running streams (a valuable resource in this part of the world). The citizen was astonished that the body responsible of regulating waste disposal is

committing the same acts it is supposed to prevent. In this case the citizen referred to the danger of polluting agricultural land and grazing grounds during flood times. The official response from the mayor of Jizan for these cases was "The municipality and village centre are concerned for the cleanness of cities and villages ... each village has its own dumping ground, village chiefs are informed to communicate with the people, in the case of filling some sites for buildings which might cause hazard, it is the responsibility of other bodies and not part of our mandate"[62]

This is a classical example of what is happening in many rural areas, where the lack of clear policies and regulations is combined with unqualified personal and lack of resources. As expected local MOMRA officials do not admit any wrong doing and try to blame other bodies or the public. The report contained photographs of the cases cited.

MOMRA's relation with MEPA is strained. As a member in the MCE and several committees MOMRA contributed to the debate on the proposed environmental impact law and the national coastal zone management plan. In both cases MOMRA, and in fact the majority of other agencies involved, opposed the mechanism of implementation suggested by MEPA. MOMRA's argument emphasised the fact that MEPA cannot be granted the authority to issue licences for development activities, and its role should be limited to establishing standards and guidelines which can be implemented by the concerned agencies under the supervision of MEPA. On the other hand MEPA insisted that it must be granted the authority to be involved in the process of issuing licences, though some MEPA officials admit that this position is unattainable. It seems that this is the main reason behind halting the approval of both laws and consequently the continuation of environmental degradation in many areas.

6.2.2 Saudi Aramco

As discussed earlier this huge corporation is the main authority in the oil sector in the Kingdom, which makes it one of the largest oil companies in the world. Saudi Aramco is an independent company and is not linked to the national decision making process applicable to other governmental bodies discussed earlier, however, it is owned by the government. This places S. Aramco in a different position where it has its own environmental policies, regulations, standards and assessment process. Aramco started as a partnership between America oil companies and the Saudi government. This made the company adopt an American administrative system and consequently standards and assessment processes. In 1963 the first pollution control policy was adopted. This made the company the leading body in the Kingdom to adopt and implement environmental standards.[63] A main policy statement was adopted by the company in 1993 "Environmental Conservation", this policy (INT-5, 1993) stated that:

> "The company will assure that its operations do not create undue risks to the environment or public health, and will conduct its operations with full concern for the protection of the land, air, and water from harmful pollution."[64]

This policy statement was followed in the same document by two regulations:

1- In all its activities, the Company will meet the standards specified by the Kingdom's environmental regulations. Where there are no established standards, guidelines will be developed which are compatible with the Kingdom's objectives of environmental conservation. The company will cooperate and participate with government and industry, as appropriate, in the development of cost effective environmental control programs and regulations.

2- It is the responsibility of each organization to assure that its facilities are designed and operated in compliance with the established corporate Environmental Conservation Policy and that they do not present unnecessary risk to the environment and the public health.[65]

This was a brief and classical policy statement. It is noticeable that it referred to the Kingdom's environmental standards which is a political rather than technical consideration. Delegating the responsibility to each body operating a specific project is a good management decision especially during performance assessment stages. The company adopted and developed several Environmental Standards and Guidelines in addition to the national ones, e.g. SAES-A-102 and SAES-A-103 incorporated MEPA's document 1401-1 & 1402 for air and water standards, although in this case MEPA's document is broader in scope than SAES-A-102 and SAES-A-103. The company's standards and guideline are more comprehensive than any other national standards in term of its coverage of a wide range of environmental issues, with the exception of the Royal Commission of Jubail and Yanbu standards which only applied within its jurisdiction limits. All environmental performance assessments are based on the company's own standards.[66] Current Saudi Aramco Environmental Standards and Guidelines are shown in Box. 6.2.

Box 6.2 Saudi Aramco Environmental Standards and Guidelines

SAES-13	Project Environmental Assessment
SAES-A-102	Ambient Air Quality & Source Emission Standards
SAES-A-103	Discharge to the Marine Environment
SAES-A- 104	Waste Water Treatment, Reuse & Disposal
SAES-A-105	Noise
SAES-A-110	Drinking Water Quality
SAES-A-007	Solid Waste Landfill Standards
SAES-A-010	Sanitary Sewers
SAES-A-020	Industrial Drainage and Sewers
SAES-A-030	Storm Water Drainage System
GI-2.104	Leak and Spill Reporting
GI-2.400	Offshore Oil Spill Contingency Plan
GI-2.401	Inland Oil Spill Contingency Plan
GI-2.714	Environmental Policy Implementation
GI-2.717	Procedures & Guidelines for Handling Polychlorinated Biphenyl's (PCB's)
GI-150.001	Asbestos Regulation
GI-151-006	Implementing the Saudi Aramco Sanitary Code
GI-355-001	Identifying, Cataloging, Ordering and Tracking Hazardous Material
GI-355.002	Receiving, Sorting and Issuing Hazardous Material
GI-355.003	Disposing of Hazardous Material
GI-355.004	Handling and Sorting PCB's for Disposal
GI-432.000	Pipeline Hydrotest Water Disposal
SASC	Saudi Aramco Sanitary Code

Source: Saudi Aramco, **Environmental Engineering Handbook.** EED, 1994. p.12.

Each of these standards and guidelines consist of detailed documents prescribing the required process and distribution of responsibilities. Comprehensive documentation is one of the company's strong points where all procedures and steps are clarified in

written format. In most cases interpretation of standards is granted to the Chief of Environmental Affairs. It is clear that when compared with officially approved national standards the company is ahead of MEPA, the body responsible for developing national environmental standards. Environmental health is fairly covered and reasonable attention is given to regulate health impact and provide basic facilities needed to maintain basic health requirement, in contrast to services provided at national level. Standards and guidelines such as SAES-A-110, SAES-S-007, SAES-S-010, and GI-150.001 have no officially approved national equivalent. One interesting Guideline is GI-2.714 "Environmental Policy Implementation". It prescribes the minimum requirement for the implementation of the company's Environmental Conservation Policy (INT-5). Furthermore, it describes the responsibility of each sector, division, and department in implementing INT-5, such particularity of responsibility is essential for policy implementation and distribution of authority. Furthermore, GI-2.714 gives basic principles governing compliance with the company's conservation policy.[67]

1- Administrative Structure

Several divisions within the company are involved directly with environmental issues, each with specified roles and duties. The Environmental Affairs Division (EAD) is the main body in charge of administrating environmental issues and co-ordinating the work of all divisions and committees involved, in addition to co-ordinating relations with other governmental agencies. Other branches involved include the oil spill response, hydrology division, marine department, preventive medicine service division, and laboratories department. This structure shows advance concern with environmental issues when compared to other governmental bodies. This concern can be attributed to the nature of the company's activities and the potential hazards of oil processing activities. However, as in any other company economic factors take priority in policy

making and consequently enforcement of regulations and standards. This was spelled out in the first objective of Environmental Conservation Policy (INT-5.)

In the case of Aramco the Environmental Engineering Division (EED) is in charge of monitoring programmes and compliance with adopted standards, nevertheless, it is not known to what extent such enforcement is allowed when it overlaps with economic factors. The company use cost benefit analysis as a tool during the policy making process especially in new programmes and projects, which leads to the question of how much weight is given to environmental quality in the process. The existence of a Preventive Medicine Service Division (PMSD) is a good sign of the attention given to environmental health especially for workers and the general public exposed to contaminated environment. Similarly it is not known to what extent the company is balancing this issue with the greater national interest.

2- Activities and Programmes

In addition to the EAD, the EED play a major role in administrating and controlling environmental activities. The division has developed several programmes "In order to effectively fulfill the company's mandate for environmental protection as articulated in the Corporate Environmental Conservation Policy Statement".[68] (Box 6.3 shows the EED's four main functional areas and programmes within each area.)

Box 6.3 Environmental Engineering Division (EED) Operating Plan

- **Environmental Compliance Programmes**
  - Environmental Awareness Program
  - Waste Minimization Program
  - Environmental Performance Assessment Program
  - Hazardous Material Control Program
  - Environmental Impact Assessment Program
  - Master Program for Waste Management
- **Environmental Engineering Programs**
  - Solid & Hazardous Waste Management program
  - Ground water Contaminated Monitoring Program
  - OSHA HAZWOPER and Chemical Safety Certification Program
  - Waste water Management Program
- **Air Quality & Meteorology programs**
  - Air Quality and Meteorology Monitoring program
  - Air Dispersion Modeling program
  - CFC/HALON Phase out Program
  - Special Air Studies Program
- **Marine Sciences programs**
  - KFUPM Sustaining Research program
  - Bioaccumulation Monitoring Program
  - Toxicity Testing Program
  - Oil Spill Survey Program
  - Oceanographic Program

Source: Saudi Aramco, **Environmental Engineering Handbook.** EED, July 1994. pp. 6-7.

It is clear from the programme list of EED that Saudi Aramco is in a different league with established environmental practice and concern, regulations, and programmes. What characterises the company when compared to other governmental

bodies is the clear policy statement which in turn translates into very detailed programme documents specifying needed standards, guide lines, and procedures, which are enforced and implemented by all involved divisions and departments. In contrast to the dilemma at national level the company with its independent status has managed to develop its standards and guidelines and implemented them with much less conflict and more efficiency. The coverage of the programmes within EED have no equivalent at the national level, and when studying the programme manual of one of these programmes "Environmental Performance Assessment", it gave a reasonable listing and details of the methodology and procedure required.[69] On the other hand, this process is self controlled i.e. the company has the sole authority to conduct these programmes and evaluate its success which eliminate the involvement of any independent body to evaluate the success and degree of implementation. The company publish several publications including the quarterly "Saudi Aramco Journal of Technology" and a bi-annual newsletter, the "Environmental Engineering Newsletter" published by the EED, which give an account of the company's activities in the field. The company is also active in research activities and contributes to regional and international conferences. Furthermore the company has adopted a recycling policy since 1992 which includes aluminium, paper, and glass.[70] A Saudi section of the American Air & Waste Management Association was established in 1993 within the company under the name "Saudi Arabian Section - Air & Waste Management Association". On the grassroots level the "Saudi Aramco Volunteers for the Environment" is a public society active within the company's community. They promote recycling and collect donations for international environmental groups. The contribution and influence of this society is limited to foreign employees, though with increasing interest from the Saudi community.

3- Relation with Other Agencies and An Overview

In the case of national environmental standards and impact assessment MEPA have a mutual agreement with the company to inspect impact reports and monitoring stations data, though without any real involvement to assess the credibility of such reports and data. Saudi Aramco contract other companies to prepare impact assessment reports. This includes the research institute of King Fahad University of Petroleum and Minerals (KFUPM). In this field no evidence is found of impact studies at policy level. It is assumed that due to the extremely powerful position of the company as the main source of the national income, both MEPA & S. Aramco avoid any conflict and publicity regarding environmental impact and compliance to standards. In addition to the sensitivity of any discussion of possible public health impact resulting from the company's activities, Aramco officials are very conservative when it comes to such issues and they share the same attitude as other governmental bodies staff that the company take the best possible measures to protect and conserve the environment.

The lack of any independent body to review and assess the company's activities impact is a critical deficiency in the comprehensive policies and programmes adopted and applied within the company's concession zones. The role MEPA play is very limited and as discussed earlier they do not have the capability to evaluate the company's compliance, degree of success in conserving the environment, and ensuring that public health is not affect by its activities. The company provides MEPA with annual reports of environmental conditions in addition to environmental impact reports prepared by or for the company. No evidence was found that MEPA seriously questioned such documents which consequently led to rejecting or modifying proposed projects or reviewing current activities. Other governmental bodies such as SASO provide some environmental standards used by S. Aramco, while the Royal Commission for Jubail and

Yanbu apply comprehensive environmental regulations and standards within its authority zones, though few of the company's facilities lie within these boundaries.

Saudi Aramco's experience in the field of environmental conservation and monitoring can be a good example for other government bodies at regional and municipal level especially in urban centres. It is also a good reference for national agencies. Such experience can be utilised to improve environmental attitudes and concerns of decision makers by giving an existing local example of adopting and implementing environmental policies and regulations. The company's practice is good proof of the possible implementation of high level environmental regulations and standards in the country if the right administrative attitude exists combined with qualified staff. The company has managed to develop a comprehensive set of environmental standards and guidelines based on clear policy goals and objectives. The level of concern and attitude towards the environment at municipal level which includes waste disposal and environmental health is higher than those existing at national level. On the other hand, with the lack of any scrutiny of the company's activities and its impact on the environment and the public health, Saudi Armco can do whatever it wants and in the end claim they are applying the best possible standards and techniques. However, with the current standards and abilities of MEPA there is no existing body capable of taking such an independent monitoring role.

6.2.3 The Royal Commission for Jubail and Yanbu (RCJY)

The Commission was established in 1975 to administer the construction of two industrial cities at Jubail and Yanbu. RCJY functions as the local government for both cities especially at municipal level, though it has much wider authority than other city municipalities. The project was characterised since its establishment by unprecedented

concern for the environment at the national level, including collecting environmental data and emphasising environmental impact during project planning and implementation. The Commission runs an inspection programme for all plants and facilities active within its zone, including performance tests, quality control, and waste disposal management.[71] The main difference between Saudi Aramco and RCJY is that the first manages and assesses its own activities without the scrutiny of an outside body. While the RCJY manage and assess other bodies activities i.e. the companies which have industrial plants within its own authority zone, this gives the Commission an ideal position due to the lack of conflict of interest which exists in Saudi Aramco case.

The two cities have a higher level of municipal services than those managed by MOMRA including strict monitoring of air and water qualities, and noise level. Recently the Commission drafted a penalty law for exceeding pollution levels and failing to comply with environmental standards and procedures.[72] This law is a new step for enforcing environmental law and incorporating an economic instrument in the Commission's environmental policies. However, it is expected that approval for such a law will face opposition from many bodies including MEPA, SABIC, and Saudi Aramco. Some agencies perceive the commission's attitude towards environmental issues as too ideal and sometimes radical.[73] The experience of the commission in city management and environmental policies and regulation can be used by other local authorities to incorporate with the little that exists now.

6.3 Non Governmental Organisations (NGO's)

As discussed in chapters four and five, involvement and administration of environmental activities in Saudi Arabia is dominated by governmental agencies. This resulted from the prevailing political culture which leaves little scope for any non

governmental bodies to function in the country. It is a fact that grassroots organisations do not exist. Furthermore, no representation of international agencies such as Friends of the Earth and Greenpeace can function in the country. However, within the prevailing political culture a few activities do exist. One form is environmental and nature groups initiated by foreign employees in some cities like Jeddah and Yanbu. It is assumed that such groups started as a way of social activity to occupy some of the social vacuum these groups face in a different society. Consequently the vast majority of these groups are non-native, though the focus of discussion and lecture topics deal mainly with local history and environment. A good example is the Saudi Natural History Society in Jeddah. This group provides a rare chance to discuss and present the natural history of the country, including publishing a periodical which has continued since 1975. Similar societies exist in other cities. The Saudi Aramco Volunteers for the Environment mentioned earlier fall within the same category.

The other form of NGO existing in Saudi Arabia is "Scientific Societies". Such societies are supervised by the university president, they are under his umbrella, which make it difficult to classify them as a NGO's.[74] However, these societies have some form of independence including electing their presidents and board members. A new adjustment to these societies law might transfer the supervisory authority to the Minister of Higher Education rather than the presidents of the universities. Several societies related to environmental issues exist, such as the "Biological Society", the "Environment Society" and the "Emran Society" which deal with the issues of urban environment and architecture. Nevertheless, the current influence of these societies in the environmental debate is negligible, where they have no role as pressure groups. Considering the current political culture, these bodies might be the only chance for initiating environmental concern to influence environmental policies and legislation. On the

other hand establishing grassroots environmental groups is essential to encourage the public to be involved in the environmental debate, nevertheless the Saudi society needs some time to get used to the concept of public involvement in a social policy debate. As discussed earlier in chapter five (See Fig. 5.3 Factors Affecting Environmental Policy Initiation) the current involvement is limited to specific problems approached mainly by individuals or small groups and end in most cases in a short time.

A charity organisation the "International Islamic Relief" initiated a recycling programme in Jeddah as a means of fund raising associated with environmental awareness. This programme concentrated on collecting aluminium cans widely used for soft drinks. The programme which started in 1993 proved to be a success and currently has expanded to other cities in the country.[75] The "Science Centre" in Jeddah, a privately funded non-profit body is active in the field of science education including environmental awareness targeting school children at different levels. Such activities are new in the country and with such investment the private sector seems ahead of governmental bodies in this field. A similar smaller centre "The Science Oasis" exists in Riyadh, though this one is initiated by a governmental body, ADA.

6.4 Environmental Awareness

The issue of environmental Awareness is fairly new in Saudi Arabia, and still in its first stages with little if any data, including the lack of comprehensive statistics of environmental concern and attitude towards environmental issues. The major contributors to the field are NCWCD, MEPA, Saudi Aramco, and the Royal Commission for Jubail and Yanbu. The Saudi Environmental Awareness Project (SEAP), a major environmental event, to introduce the concept of environmental

conservation to the public, was funded and organised by the private sector, though through a governmental programme.

6.4.1 Awareness Programmes

Several awareness programmes are implemented by concerned agencies. However, the main environmental agency, MEPA, make little contribution to this field. As discussed earlier MEPA failed in initiating and introducing the issue of environmental conservation to the public especially in the field of environmental health. Although MEPA officials would like to claim that SEAP is one of its activities, it is difficult to grant MEPA the whole credit for this project. The NCWCD is the most active body in environmental awareness at national level, however, it concentrates on the field of wildlife conservation and habitat protection. NCWCD activities have succeeded in introducing the concept of wildlife conservation and reintroduction of native species to the public through its media campaign. Nevertheless, no statistics are available to assess the change in public attitude towards wildlife conservation, though, as discussed earlier concerns about the reserves socio-economic impact is a major factor and still needs to be addressed in the Commission's awareness programmes. Saudi Aramco have a good contribution including environmental awareness programmes, a recycling programme, and educational publications for children. However, as one of the major polluters in the country the company still needs to improve the public awareness level especially in the field of environmental health. The RCJY, another independent governmental body is a leading figure in this field. The commission showed an early concern for the environment and public health through its Environmental Impact Programme and strict environmental regulations. The public within the commission's authority zone is encouraged to participate in recycling programmes and several of the RCJY's publications introduced the concept of environmental protection and impact to

the residents of Jubail and Yanbu. Several companies including those of SABIC-MIE, active within the two industrial cities, have their own awareness activities. Other Ministries involved in environmental issues such as MOH, MIE, MOI, have very little input in the field, though the MOI is involved with the NCWCD in the hunting control announcements.

6.4.2 The Saudi Environmental Awareness Project (SEAP)

This project was initiated through the Economic Offset Committee (EOC) in collaboration with MEPA.[76] EOC is a body responsible for implementing the local economic investment section of large military contracts. A SEAP publication stated that "General Dynamics which identified the 'Environment' as a potential sector of interest, administers SEAP at its cost and contributed to a fund-raising campaign to develop and implement SEAP."[77] Hence, the government was not directly involved in funding this activity. The private sector was asked to participate in sustaining the cost, which resulted in around two million S.R. from thirty six companies. Other governmental bodies such as RCJY, ADA, Saudi Air Lines, provided logistic and resources.[78] The Organising Committee of SEAP specified the following goals for SEAP:[79]

1- Introducing the concept of the environment and the status of the Saudi environment to society members, and entrenching the feeling of belonging and conservation towards this environment based on Islamic principles.
2- Improving the importance of environmental awareness as a base for development activities.
3- Identifying the characteristic of healthy environment and factors affecting it.
4- Enhancing individual behaviour towards the environment and natural resources.
5- Presenting the government efforts in environmental protection and the role of governmental bodies especially MEPA and NCWCD.
6- Emphasising the role of the Saudi citizen in environmental protection and conservation.

7- Emphasising the balance between sustainable development and environmental quality in a way not to disturb development ratio and harm the environment.

The first phase of the project concentrated on translating educational materials prepared by UNESCO entitled "Environment in Action" into Arabic. These materials were aimed at school children and contained teacher's manuals to assess them in the process of introducing this information to the students. A SEAP leaflet suggested that the Ministry of Education agreed to adopt the exhibition materials for teaching purposes and to gradually introduce them into the Kingdom's schools. A group of short courses were organised to instruct school teachers in methods of introducing these materials to the students. The second stage of the project was oriented towards the public, and included: essay, photo, and drawing competitions; seminars; media statements by senior government officials; construction of permanent environmental sculpture in Riyadh; and the preparation of the Environmental Exhibition.[80] The exhibition itself received extensive media coverage and was opened by H.R.H. Prince Sultan Minister of Defence and Chairman of the Ministerial Committee on the Environment (MCE). The announced cost of the exhibition of 27 million S.R ~ £ 5 million, was provided by the private sector, however, it is not known how much is the contribution of the local private sector i.e. excluding funding by General Dynamics. The exhibition which lasted for about two months, involved 150 agencies and companies participating in the activities. Several models presented the natural environment of the country and the impact of human activities on it. Some companies presented their experience in environmental conservation, in addition to distributing large amounts of educational and awareness material. For all participating governmental agencies this was a chance to claim an active role in environmental issues, and, as expected all emphasised in their presentations and publications that they had achieved great success in the field.

It is fair to say that the overall level of the materials exhibited and methods of presentation were good. A noticeable excellent product was the high level of educational material distributed to the visitors, especially the series "Know Your Environment" published by SEAP. This series was oriented towards school children and introduced many useful concepts such as ecosystem, food chain, and the negative effect of pollution. Other materials introduced the public to issues like environmental health, pollution, and nature conservation. SEAP was an precedent activity combined with high public attendance, which led to extend the time of the exhibition for a few weeks. On the other hand the exhibition's message seemed to indicate that it is the responsibility of the public to maintain clean and healthy environment without an indication of the vital role required from governmental and private bodies. All media coverage with one exception described the event as a complete success. A commentary in Okaz News paper by A. Al-Bouq (1995) gave the only critical review of the event. The writer questioned the extensive use of advertising stands to publicise the event. He wrote "I couldn't see any application of environmental principles in constructing the exhibition, none of the materials were recycled, the publications were printed in glossy paper, and no part of the exhibition used solar energy."[81] In another commentary the writer criticised the complexity of some posters and methods of presentation which emphasised written rather than audio visual media which could be more easily comprehended by the public.[82] Such comment in a widely circulated newspaper is a good indication of the increased attention given to environmental issues and degree of flexibility allowed in assessing such activities. In the last few years the local media especially newspapers increased their coverage of environmental issues. Okaz newspaper maintains a weekly page for science and the environment which includes coverage of local agencies, activities and events.

It is clear that there is no structured strategy for environmental awareness in the country and most activities carried out by independent bodies such as Aramco, RCJY, and NCWCD, are self initiated. On the other hand MEPA have no equivalent activity. Although SEAP was a good step forward it does not represent any long term strategy from MEPA towards increasing environmental awareness. SEAP was a single project for a limited time. The most successfully organised awareness programmes are those of NCWCD and independent bodies, such as Saudi Aramco and RCJY. The high sensitivity towards any alarming news concerning the public health is dominating the media, though with increasing coverage of environmental issues in local newspapers, e.g. industry impact on public health, contaminated food, preservatives and additives. Most of these concerns are initiated by individuals rather than journalistic investigations. MEPA need to conciliate its role as the main agency responsible for such issues and conduct public opinion surveys to establish statistical data regarding public concern and attitude towards environmental issues. Such data is vital to plan a national environmental awareness strategy including long and short term goals and objectives.

6.5 Environmental Research

The discussion in this chapter included research activities carried out by main environmental agencies. The efforts by MEPA to establish data for environmental conditions was relatively successful for a short period of time. However, MEPA was not able to continue this activity, it is assumed that funding was a problem, in addition to the ability of MEPA's management and staff in this field. Most of MEPA's research activities were contracted to foreign consultants including international agencies such as IUCN, local input was very limited. Other agencies have similar problems resulting in poor environmental data and consequently a

major deficiency for the process of environmental decision making. The NCWCD is in a better situation where clear aims were established, which intern translated into research programmes with reasonable resources allocated for this purpose. This resulted in the first step to establish environmental data for the Kingdom's wildlife and ecological systems. On the other hand MAW during its long involvement in environmental issues failed in establishing a basic inventory of the country's natural resources needed for any environmental studies and decision making. clear goals of MAW's research activities must be established to organise its research activities and coordinate it with other agencies including KACST.

6.5.1 Major Players and Research

In the case of MOMRA very little if any effort is taken to contribute to environmental research. As discussed earlier MOMRA do not have any environmental strategy or clear vision of its environmental policies. Establishing an environmental research unit within the Ministry can help to initiate planning policies at regional and urban levels. Such activities needs to concentrate on urban environmental health including pollution and waste disposal, in addition to countryside conservation and visual impact assessment. Saudi Aramco have a good programme for environmental research which needs to be more independent to serve as an advisory branch to the executive office in order to evaluate the companies departments and their compliance to environmental policies and regulations. The MOH began recently to realise the importance of this field. It organized the first National Conference on Environmental Pollution & Health in January 1996. By reviewing the abstract of papers submitted at this conference it seems that there is an increasing attention given to environmental health issues. However, it is not clear if this activity is part of a long term policy or a one stand event. MOH need to be the

leader in environmental health issues and to establish a National Policy for Environmental Health including a research programme emphasising local problems.

6.5.2 Academic Institutions

Most higher academic institutions in the Kingdom includes faculties and departments which can contribute to environmental problems. However, environmental research activities remain limited and lack financial support and resources. King Abdulaziz University (KAU) include the faculty of Meteorology, Environmental Studies and Arid Land Agriculture. The faculty consists of departments in hydrology, environmental studies, arid land agriculture, and meteorology, the environmental studies department consists of five sections: environmental health, air pollution, water pollution, noise pollution, and quality hygiene. Another faculty, Marine Science includes departments in marine biology, chemistry, geology, and physics. Other faculties with research activities include the Science, Earth Science, and Engineering faculties. No research centre exists within the university, and research activities suffer from limited resources and the lack of long term planning. With such wide range of expertise KAU can be a leading body in environmental research, establishing a research centre within the university can help in providing a better environment for researchers and attract private and public sector funds. King Saud University (KSU) have several faculties contributing to the issue, including a faculty for Agriculture with several specialised departments. The University includes the centre for Desert Studies, which conducts research on the desert environment. King Fahad University for Petroleum and Minerals (KFUPM) is active in environmental research through its Applied Research Center. This centre attracts funds from some governmental bodies and Saudi Aramco. King Fisal University (KFU) in Dammam and Al-Hassa includes a research centre devoted to

the date palm; the university also includes an agricultural faculty and the only veterinary school in the country.

6.5.3 King Abdulaziz City for Science & Technology (KACST)

The main body responsible for drawing the national research programmes is King Abdulaziz City for Science & technology (KACST). The City objectives included: suggesting the national policy for the development of science and technology, working out the required strategy and plan for its implementation, and offering grants to individuals and scientific institutions for the purpose of conducting applied scientific research.[83] The City was established in 1977 and went through several stages to reach its present status. A programme for grants provide annual support for a number of applied research project. The National Research Projects is another activity which is supported and implemented by KACST subject to a request by a governmental body for creating a suitable solution of certain problems facing development plans.[84] The City also active in establishing scientific data bases and connecting governmental bodies and academic institutions with international data bases. However, this activity is still struggling and services provided are not comparable to international standards. Seven research institutes form the core of the City research activities these are: Energy Research Institute, Natural and Environmental Research Institute (NERI), Atomic Energy Research Institute, Petroleum and Petrochemicals Industries Research Institute, Astronomy and Geophysics Research Institute, Space Research Institute, and Electronics and Computers Research Institute. The NERI is the responsible body for environmental research, however, its activities are limited, and as stated in a KACST publication "the most important of which (research activities) are the research relating to fish culture in fresh water".[85] On the other hand, a NERI leaflet suggested that future

programmes will include: Earth Science Studies, Arid land Studies, Environmental Pollution studies, Water Technology Studies, Nutrition Resources Studies, and Environmental Awareness. Such programmes if implemented will be a good step towards establishing a comprehensive and long term environmental research activities.

The City publish annually a list of "Priorities of The Annual Grants Programme for Applied Research" This publication includes a proposal for research fields and topics which the City recommend based on its assumption of priorities. Environmental research in contrast to Agricultural, Medical, and Engineering, is not classified as a separate fields, nevertheless, several proposals within these fields are directly related to the issue and can be of benefit to decision makers and establishing environmental data. By comparing research (those related to environmental policies) priorities lists of 1994 and 1995, it is noticeable that some remained on the list, indicating that no proposals were submitted or proposals were rejected. For example, "Study of Factors Affecting Environment of Fish resources in the Red and/or the Arabian Gulf", and "Biological and Control Studies on Red Palm Beetle", all were repeated in 1994 and 1995 list. Several research priorities such as "Study of pesticides use on Agriculture: their adverse effects on the environment and health, and methods of their control", "Establishing Gene Banks of Local Plants Species" are a good sign of the City concern of the lack of such vital basic information which is in great demand by both academician and decision makers.[86] The amount allocated for supporting environmental research is minimal, a total of approximately 10 million S.R. = £ 1.66 million, was spent on pollution and environmental protection research projects in thirteen years (1979-1992). Equivalent amount was allocated for natural resources research projects. This make the average annual

funding for both pollution & environmental protection, and natural resources projects = S.R. 1.45 million = £ 241,000.[87]

It is obvious that there is a lack of comprehensive environmental research plans at the national level. Research activities of governmental bodies are fragmented and lack clear aims, in addition to a lack of resources and qualified staff. Academic institutions have contributed little to the field, one side of the problem is the very limited funding allocated for research within universities and by KACST.

At National level there is no clear plan for establishing basic environmental inventories and conducting research for assessing environmental impact. Such deficiency can largely be blamed on MEPA the body responsible for this issue and KACST the advisory and planning body in the field. Little funding is available for academic institutions from governmental bodies such a MEPA, MAW, NCWCD, and MOMRA. Most agencies do not have programmes to support research at local universities to utilise expertise in fields relevant to the environment. The research center at KFUPM is the most successful institutions involved in environmental research funded by governmental bodies. The problem is shared by both sides, where governmental agencies lack the vision to plan and establish research programmes with the aid of academic institutions. While on the other hand, academic institutions need to take several steps to promote their abilities and attract research funds. It is also the fact that the country lacks expertise in some areas which need to be addressed by universities and KACST. The root of environmental research problem lies in the lack of clear plans and programmes by governmental agencies which have no clear vision of what is needed and to what extend such research can help in initiating and adopting environmental policies.

6.5 Concluding Remarks

The discussion in this chapter illustrated the institutional dilemma in the Saudi environmental policies and laws. MEPA, the main agency, failed in achieving its specified goals, despite a promising start in the 1980's. In addition to the clear problem of authority conflict and inability to co-ordinate environmental activities, MEPA suffers from a lack of trained personnel and facilities to carry out its duties. Most importantly, the agency has administrative problems which can also be blamed for the failure in co-ordination with other governmental agencies. On the other hand NCWCD proved to be a successful agency within its specified mandate, though its ever expanding authority might prove to be a disadvantage, especially with limited resources. Its administration succeeded in establishing a motivated staff and the concept of establishing a special fund for wildlife conservation is a good step in the right direction to diversify its financial resources. However, it is too early to evaluate the success of the Wildlife Fund. The commission still needs to address the socio-economic impact of its reserves and the public reaction to the reserve system. Such issues might prove to be decisive in shaping future plans. MAW is a struggling body with a wide range of authorities and duties. The Ministry was not successful in conserving native vegetation cover and protecting sensitive habitats including traditional *Hemas*. National parks proved to be a major failure for the Ministry. Further more, little was achieved in the area of controlling the use of agricultural chemicals. The weak point of MAW is the conflict of interest between several of its activities including fisheries vs. marine conservation, agriculture and water supply vs. conservation of natural resources, national parks and Hemas vs. subsidising and managing grazing and agricultural activities. MAW's authority and scope of work need to be redefined, including redistribution of duties and mandate at

national level to avoid co-ordination problems, conflict of interest, and overlap of authorities.

MOMRA which is supposed to be a major player in the environmental arena has little activities in the field. Despite the vital role of regional and local municipalities in administrating and controlling environmental standards, very little attention is given to environmental issues including environmental qualities and health. There is no clear environmental strategy in MOMRA. A comprehensive plan is needed to establish the concept of environmental qualities such as air and water quality and noise levels in both rural and urban areas. Independent bodies such as Saudi Aramco and the RCJY proved to be the most successful in adopting and implementing environmental policies and regulations at urban level. Both bodies managed to establish and incorporate the concept of environmental conservation and protection at different levels of the decision making process. However, a mechanism of assessing Saudi Aramco activities and the degree of compliance is needed. A reformed MEPA might be able to do this job, though a clear mandate combined with well equipped and trained staff is needed.

Environmental awareness in Saudi Arabia is varied at different levels. At national level MEPA has failed in achieving any tangible success in the field. On the other hand SEAP was an excellent step, despite the deficiencies which existed. A clear and comprehensive national strategy for environmental awareness is urgently needed. Such a strategy must co-ordinate the efforts of all governmental agencies and establish specific goals and standards which must be achieved within a certain time-span. The role of the public in the environmental debate will depend on the efficiency of such a strategy. An ill-informed public cannot develop concern and hence contribute to the debate. Any awareness campaign must incorporate the access to information and data of

issues of interest to the public, such as environmental health. Although establishing grassroots environmental organisations is not foreseeable in Saudi Arabia, the government needs to give the concept of environmental societies careful consideration. Such societies or groups can act as public monitoring bodies, scrutinising governmental and private agencies activities, which consequently improve the efficiency of these agencies.

There is a lack of comprehensive environmental research plans at the national level. Research activities of governmental bodies are fragmented and lacks clear aims, in addition to lack of resources and qualified staff. Academic institutions contributed little to the field, one side of the problem is the very limited funding allocated for research within universities and by KACST. There is a lack of clear vision by governmental agencies of what is needed and to what extend research findings can help in initiating and adopting environmental policies. KACST can be the body capable of drawing up a national plan for environmental research in co-ordination with MEPA, academic institutions, and all involved agencies. The private sector also needs to be included in funding research programmes.

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[1] HCAR, 1981. p.1.

[2] MEPA, 1989 b, p. 5.

[3] HCAR, 1981, p. 1. For the listed duties the English text from MEPA, 1989 b, p. 5. was used.

[4] HCAR, 1981, p. 20.

[5] For more information regarding duties and activities of NMEC departments. See HCAR, 1981, pp. 20-22.

[6] HCAR, 1981, p. 17.

[7] Ibid., pp. 17-19.

[8] Interview, **MEPA Official 2.** June 1995.

[9] Ibid.,

[10] Royal Embassy of Saudi Arabia-USA, "New Research Center for Environmental and Meteorological Studies." in **The Monthly Newsletter of Royal Embassy of Saudi Arabia.** htt://imedl.saudi.net/publications/july/research.html: Royal Embassy of Saudi Arabia-USA, 1996. p.1.

[11] Interview, **MEPA Official 2.** June 1995.

[12] MEPA, **The Environmental Support of Nomads.** MEPA, Jeddah: Saudi Arabia, No Date, p.1.

[13] Interview, **MOMRA official 2.** Riyadh, June 1995.

[14] Site visits by the author, summer 1995.

[15] Interview, **MOMRA official 1.** Riyadh, June 1995.

[16] Interview **MEPA official 3.** Jeddah, June 1995.

[17] SGCM, **Decision Number (177) 25/8/1406 H.** SGCM, Riyadh, 1986. p.1.

[18] Interview, **NCWCD Official 1.** Riyadh, June, 1995.

[19] SGCM,, 1986. Item/3. p.11.

[20] Ibid., Item/4. p. 12.

[21] H.R.H. Prince Khalid Al-Fisal initiated another wildlife reintroduction programme for falcons in Asir Region.

[22] Family rank and age are influential and recognised in such cases in the Kingdom.

[23] NCWCD, **Annual Report 1406-1408 H.** Riyadh, Saudi Arabia: NCWCD, 1988. p.126.

[24] Child & Grainger, 1990. Table (7.1.) No page number, printing error. Previous page 196.

[25] This site was declared as a protected area in 1978 under the terms of the hunting law and was transferred from the authority of MEPA to the Commission in 1988.

[26] Interview, **MEPA official 3.** June 1995.

[27] Ibid.,

[28] Personal communication, **John Ady.** Jeddah, May 1995.

[29] NCWCD, **Annual Reports** 92-93-94.

[30] Personal communication, **John Ady.** Jeddah, May 1995.

[31] The use of firearms is prohibited all year round in all sites, the only allowed method of hunting is falcons and dogs.

[32] See the NCWCD Annual Reports for full details of research activities, and symposiums organised by the Commission.

[33] Interview, **NCWCD Official 1.** Riyadh, June 1995.

[34] Ibid.,

[35] NCWCD **Annual Report 1987-1988.** NCWCD: Riyadh, Saudi Arabia, 1988, pp. 35-36.

[36] During the fiscal year 88-89 in addition to its official annual budget of 24,865,000 SR., the King granted the Commission an extra 33 million as a Special Royal Gift. See the Annual Report 1987-1988, NCWCD, 1988. p.123.

[37] MAW, **Structural Organization of Central Body and Provinces Branches.** (chart) in Arabic, MAW, 1995. p.1.

[38] Ibid., p. 1.

[39] Interview, **MAW Official 2.** Riyadh, June 1995.

[40] Interview, **MAW Official 1** Riyadh, June 1995.

[41] In the 1980's MEPA conducted a survey on Hema sites in Al-Hejaz. Unfortunately access to this survey data and any accompanied document was not available.

[42] Interview, **MAW Official 1.** Riyadh, June 1995.

[43] JECOR, **A Management and Development Plan for Asir Kingdom Park.** The joint US. Saudi Arabian Commission on Economic Cooperation (JECOR), June 1976. No page number.

[44] Interview, **MAW Official 3.** Riyadh, June 1995.

[45] For further discussion on ANP see: Waller, Edmund. **Landscape Planning In Saudi Arabia.** Singapore: Shani Publications, 1991. , S. Hamed, **Landscape Planning in the Middle East - the case of Asir National Park.** Unpublished Ph.D. dissertation, Virginia Tech., Blacksburg. & A. Al-Gilani, **Asir National Park-Process and Assessment.** Unpublished paper, University of Pennsylvania, Philadelphia, 1992.

[46] Interview, **MAW Official 1.** Riyadh, June 1995.

[47] MAW, **National Parks.** (in Arabia), Riyadh, Saudi Arabia: MAW, No date, p. 11.

[48] MCE, 1992. p. 32.

[49] MAW- The National Center for Agricultural and Water Research, **Regulating the Use of Chemicals.** (Leaflet) in Arabic, Riyadh, Saudi Arabia: MAW & SEAP, No Date, No page number.

[50] MAW, **MAW's Role in Environmental Conservation.** MAW, Riyadh, 1994. p. 10.

[51] MAW distributed several educational leaflets during the SEAP (1995) which included: Controlling the Use of Pesticides, The Effect of Antibiotic, Growth Hormones, Herbicides on Animals and Humans.

[52] MCE, 1992. p.35.

[53] MAW, **MAW Efforts in Developing Native Vegetation Cover.** (in Arabic) No date, p.10.

[54] CM-Expert Branch, **Living Marine Resources within the National Waters. Fishing, Investment, and Conservation Law.** M/9 1988. Item/1. p. 1.

[55] MCE, 1992. p. 35.

[56] Interview with **MOMRA Official 2.** Riyadh, June 1995.

[57] Sayf Babaker, "Basic Solutions for Underground Water Problem in Jeddah" In **AL-EQTIASDIAH**, (in Arabic) No. 1087-Thursday August 1, 1996. p. 1.

[58] Personal observation during site visits to rural communities in Al-Baha Region.

[59] Hasan Al-Hazemy, "Jizan Valleys are Dying From Pollution, while the municipality confirm its acceptance of citizens initiatives". In **Al-Yaum Newspaper**, (in Arabic) No. 8459. 12 Aug. 1996. p.6.

[60] Ibid., p. 6.

[61] Ibid., p. 6.

[62] Ibid., p. 6.

[63] Saudi Aramco, **Environmental Engineering Handbook.** EED, 1994. p.5.

[64] Saudi Aramco, **Environmental Conservation.** Policy Statement, INT-5, August 4, 1993. p.1.

[65] Ibid., p. 1.

[66] I&EAD-EAD, **Environmental Performance Assessment- Program Manual.** Saudi Aramco, No date, pp. II-1 - II-5.

[67] For further details see: Saudi Aramco, **Environmental Policy Implementation GI-2.714**. 1992.

[68] Saudi Aramco, 1994. p.6.

[69] Discussing and assessing the company's environmental programmes is beyond the scope of this research, though such established programmes can be used to review and update other agencies programmes at national and local levels.

[70] EED, "Recycling" - Saudi Aramco and the environment. In **Environmental Engineering Newsletter**, EED, December 1993. pp. 8-10.

[71] RCJY, **Industry and Environmental Protection in Jubail and Yanbu Industrial Cities.** RCJY, Jubail, No date, pp. 6-9.

[72] Interview with **S.ARAMCO Official 1.** Dhahran, June 1995.

[73] Ibid.,

[74] All Universities in Saudi Arabia are governmental and function under the Ministry of Higher Education. University Presidents are appointed by a Royal Decree, while deans are appointed by the minister based on the president's recommendation.

[75] M. Abouaisha, "150 Million - the Price of Waste Aluminium Cans in the Kingdom" in **Okaz Newspaper** (in Arabic) No. 10447, 21 March 1995. p.18.

[76] MEPA-MOD, **Saudi Environmental Awareness Project.** (leaflet) MEPA-MOD, No date.

[77] Ibid.,

[78] Ibid.,

[79] Organizing Committee, **Saudi Environmental Awareness Project.** (in Arabic), MOD, 1995, pp. 3-4.

[80] Ibid.,

[81] A. Al-Bouq. "Environmental Awareness Project. (1)" in **Okaz Newspaper**, (in Arabic) No.10417, 14 Feb. 1995, p. 22.

[82] A. Al-Bouq. "Environmental Awareness Project.(2,3) (3)" in **Okaz Newspaper**, (in Arabic) No.10424 & 10433, 21 Feb. & 7 March 1995, p. 22 & p. 19.

[83] For full list of objectives see: KACST, **King Abdulaziz City for Science & technology (KACST)** (in Arabic) KACST, 1994. pp.6-7.

[84] KACST, **King Abdulaziz City for Science & technology (KACST)** (in Arabic) KACST, 1994. p. 9.

[85] Ibid., p.12.

[86] For more details on research priorities list see: KACST, **The Sixteen Annual Grants Program for Applied Research.** (in Arabic)KACST, Riyadh, 1995. & KACST, **Priorities of The Fifteen Annual Grants Program for Applied Research.** (in Arabic) KACST, Riyadh, 1994.

[87] KACST, **General Directorate of Research Grants Programs.** (brochure) (in Arabic) KACST, Riyadh, No date, p. 16.

Chapter Seven

Consolidating The Picture For A New Future

Introduction

The first part of this chapter summarises and categorises the major factors shaping Saudi environmental policies, by discussing the findings of the previous chapters classified into the following categories: Environmental Policies and Laws, Environmental Decision Making, Environmental Institutions, and Environmental Awareness, in addition to the Public Role. Under each category an assessment is given in addition to areas of deficiencies and conflicts. The second part utilises these findings to construct a proposal for change. This proposal revises the national framework for environmental policies. It covers four main sectors:

1- Political culture and the public role.

2- Environmental Decision Making Process.

3- Environmental Policies and laws including a conceptual draft for an Environmental Policy Act.

4- New Institutional Structure.

7.1 Saudi Environmental Policies and Laws

The discussion in chapter four introduced environmental conditions and stresses in the Kingdom of Saudi Arabia, in addition to the political system and culture of the country. Although severe environmental impact is relatively recent, it is obvious that stresses on the environment have increased in the last thirty years. This has resulted in several steps by the government to deal with the increasing

problems. These included adopting policies and legislation in addition to an institutional structure with varied scope and mandates. Several elements influenced environmental policy initiation, adoption, and implementation. However, the most influential factor was the prevailing political system and culture discussed in chapter four.

7.1.1 Political Culture

Political Culture influenced and shaped environmental decision making process; policy implementation; institutional relations; and consequently the administrative culture. It also influenced public contribution to the environmental debate and the degree of scrutiny allowed to independent bodies such as newspapers. However, as in any other country this factor is dynamic and with the announcement of the new constitution, the Kingdom witnessed some change in the political atmosphere. The decision to limit any Ministerial position to a period of four years is one evidence of such a change.[1] This element and possibly a signal from the government, allowed local newspapers the experience of an increased flexibility in discussing and scrutinising governmental bodies activities. However, it is also noticeable that such flexibility is still limited to local public services, while national policies and plans remain immune to criticism. The case cited in chapter six of a newspaper reporting on waste disposal problems in Jizan valley is a good example of local media contribution to the environmental debate nowadays. Such change in the political culture can be advantageous in environmental issues, where public concern can be channeled through local media venues to influence environmental policies, initiations, and implementation.

The Consultative Council (*Majlis Al-Shura*) is another element in the changing political culture. However, it is not clear to what degree the Council is aware of environmental conditions and public environmental needs. Further more, the lack of access to Council deliberation on environment issues makes it difficult to assess their ability to influence the environmental decision making process. The Council's role in the environmental debate needs to be publicised especially in issues related to public health. The establishment of the Council still needs to prove that it was a constructive step to incorporate the public concern in the decision making process as well as creating a body capable of scrutinising the activities of government officials and bodies. Further political reforms might include these concerns.

7.1.2 Environmental Policies

The government duties towards the environment were spelled out in the new constitution, officially referred to as the "Basic Law of Government," as discussed in chapter four. Item 32 of the constitution formed the basis for governmental duties and obligations to protect and maintain a healthy environment for the peoples of Saudi Arabia. Saudi Environmental policies can be traced and found in several governmental documents. The main documents providing the government environmental policies were discussed in chapter five under "Environmental Policy Document (5.2)". These documents include: Development plans; State of the Environment Reports; The National Plan to Protect Areas; Conference on Environment and Development Recommendations; The National Report to The United Nations Conference on Environment and development-Rio-92 (NRUN); and Agenda 21-Saudi Arabia. These documents gave a picture of existing environmental policies and the government attitude towards the environmental problems.

The main source of national environmental policies is the five year development plans. These documents contained a good and clear direction of the government environmental policies, especially the fifth and sixth plans. They also established the ideological orientation and commitment of the government towards the environment. However, as discussed earlier most of development plans policy proposals have never been implemented. The most recent example is policy and programme proposals of the fifth plan (1990-1995), which included an excellent assessment of deficiencies in the applied policies, and a clear policy direction and proposals aimed to solve those deficiencies. The sixth plan also included a constructive assessment and comprehensive listing of proposed policies and programmes. However, it did not refer to the failure to implement the fifth plan's proposals. This proves the case that development plan environmental policies are merely formalities and do not carry tangible weight within the involved agencies except during the time when they were requested (by MOP) to submit their proposals. No mechanisms exist to follow up policy proposals, and proposed policies do not reflect any co-ordination between environmental agencies and the MOP. It is noticeable that some tasks, e.g., those mandated to MEPA in the sixth plan, fall within the authority of MAW, which will further increase overlap of authority and consequently rivalry and conflict.

Although preparing State of the Environment reports was delegated to MEPA in 1981, it failed to achieve this duty. SoE 84 was the first and last comprehensive account of national environmental condition officially prepared and published by any governmental agency.[2] The first version of NRUN was prepared under the tittle SoE 92. However, this version was not adopted, and later modified to be issued as the National Report to the UNCED-Rio-92 (NRUN). This situation where there is no

official comprehensive reference of environmental conditions makes it extremely difficult to initiate, plan, and propose environmental policies. The process of environmental decision making and policy initiation cannot function without such vital information. On the other hand, it can be argued that considering the current administrative and political culture, it is doubtful that the existence of such documents will substantially influence policy initiation and support the decision making process. Nevertheless, MEPA should make one of its main priorities the issuing of an annual State of the Environment report, which must be available to all involved agencies and the public.

The MEPA's sponsored conference on environment and development in Saudi Arabia-1990 was a serious attempt to formalise a clear and comprehensive set of national environmental policies, and to involve all concerned bodies. The conference recommendations are a good source for future policy proposals and if taken seriously at the time would have improved environmental conditions in the Kingdom. The NCWCD plan for nature reserves "A Plan to Protect Areas in Saudi Arabia" (1990) is another good source for future policies to conserve wildlife and ecosystems. Although not officially approved, NCWCD is using this document as a source for its policies and plans. The NRUN (1992) provided a good account of existing policies and programmes. However, it did not establish any new ones. On the other hand, Agenda 21-Saudi Arabia which was officially approved in 1995, do provide conscientious policy and programmes proposals covering a wide range of environmental issues. As discussed earlier no evidence exists that these proposals will be taken seriously and reach implementation stage in the near future.

One main feature of these documents is the reasonable efforts that have been put into preparing them, which give an indication that the government does have some direction to its environmental policies based on an ideological principle and some vision of what is needed. However, the vast majority of these policy proposals and programmes failed to reach the implementation stage. This can be attributed to several reasons, mainly the inability of environmental agencies especially, MEPA and MAW, to follow up policy proposals and to co-ordinate environmental activities which is a major duty of MEPA. On the other hand, most agencies do not have the qualified staff who are capable of translating these proposals into specific plans and programmes. Most agencies lack the technical staff and resources for such duties. Legislating for these policy proposals is another problem where most of these policies lack the legal tools for implementation. However, officially approved laws have their own implementation problems.

7.1.3 Environmental Laws

The effort to adopt and issue environmental laws in Saudi Arabia was relatively successful in several areas. However, this effort was not comprehensive. MAW was the leading body to initiate and sponsor laws aimed to improve and protect the environment. The 1970's witnessed the issuing of CM/208, CM/207, CM/19, M/26, M/17, and M/22; these laws covered an important section of the ever increasing environmental problems. MAW continued the effort in the 1980's by issuing M/34, 1182/8, CM/225, M/1114, and M/9, the important Marine Resources Conservation law. On the other hand, MEPA was not very successful in this field. In the 1980's MEPA managed to pass environmental standards and CM/271; this was good but rather a small success for MEPA. Other standards including Chemical Safety are still under consideration. The effort to establish local standards was

hindered by the lack of qualified personnel and basic data of local conditions. The National Contingency Plan for Marine Pollution Control CM/157 1411H was approved in 1991 as result of the Gulf war oil spill. (This plan was drafted in the mid 1980's.) As discussed earlier the Environmental Impact Assessment law (EIA) and the National Coastal Zone Management Plan (NCZMP) have been under deliberation for several years, in addition to the General Law of the Environment. NCWCD succeeded, after some struggle, to pass the Wildlife Reserves Areas Law M/12 1415H (1995) which provides the legal instrument for the Commission's plans and activities.

There is a gap in the current regulations mainly in the environmental health sector, including pollution monitoring and waste disposal, in addition to the lack of any regulation to protect coastal areas from urban and industrial development. The most obvious gap is the non-existence of Environmental Impact Statement requirement for development projects at all levels and sectors. It is noticeable that MAW was the most active body in drafting and sponsoring environmental laws mainly in the 1970's and 1980's. On the other hand MEPA was slow in drafting environmental standards and faced serious problems to gain approval for its most critical laws. Other major players such as MOMRA, MIE, and MOH contribute little to the field, leaving a gap in the legal instruments to protect and conserve the environment and human health. Problems and obstacles preventing adoption and approval of environmental laws are discussed under "The process predicament" 7.2.2 in this chapter.

The government attitude towards addressing environmental issues raises a serious problem which was clearly demonstrated in the first part of Agenda 21-

Saudi Arabia, under "The Kingdom policy and method in environmental and development sector", "Institutional sector", "Goals and priorities", and "Achievements". All these sections emphasised that the Kingdom has very little to worry about regarding environmental issues simply because we achieved many of the recommendations of Agenda 21 adopted in Rio-92. Although development plans were critical and constructive in their assessment, the latest governmental document gives another perspective. This indicates that there is a serious attitude problem between some government officials who would like to demonstrate that their agencies and departments have succeeded in their assigned goals.

7.2 Environmental Decision Making Process

The process of environmental decision making in Saudi Arabia that was discussed in chapter five struggled for some time to reach its current form. However, several problems do still exist especially in relation to co-ordinating environmental activities and legislation. Policy initiation is the first step in the process.

7.2.1 Policy Initiation

The four main factors of environmental policy initiation suggested in chapter five were the result of the political and administrative systems. These are:

1-Public Concern & Pressure
2-International Commitments
3-Research Findings
4-Development Plans

The following gives a summary of the first three factors and their influence on policy initiation. Development plan influence was discussed in section (7.1.2) "Environmental Policies".

1- Public Concern & Pressure

The public role in initiating environmental policies is very limited. In some cases, however, continuous pressure can result in bringing the issue to the attention of high ranking officials and consequently initiate further investigation of the matter. The most common way to express public concern within the rural community is to write to the local governor and or the Royal Court. In such cases the court will refer the issue to the relevant agency e.g. MEPA and request an investigation. However, it takes many complaints to transfer such concern into a policy initiation. In urban areas concern is mainly expressed to the local media and municipalities or the involved agency as a first step. The issue will reach the local governor and or the Royal court as the final venue.[3] In many cases it is not clear to which agency the concern should be directed. For example, a petition signed by three hundred citizens was brought to the SEAP because they were not sure to which agency it should be directed.[4] In general, public involvement in the environmental decision making process is restricted by the political system and culture. Environmental awareness and the public role are discussed further in this chapter under "Environmental Awareness and the Public Role" (7.4)

2- International Commitments

With the increasing attention given to environmental issues in international politics, Saudi Arabia was involved in many international conferences and meetings. Some resulted in commitments to adopt environmental policies and regulations. The approval of Agenda-21 Saudi Arabia is the most recent example. However, in most

cases approving such international agreements take a long time and in others they never receive approval. Nevertheless, due to the increasing power of international agreements it is assumed that this factor will be more influential in the future.

3- Research Findings

It is obvious that there is a lack of comprehensive environmental research plans at the national level. Research activities of governmental bodies are fragmented and lack clear aims, in addition to lack of resources and qualified staff. Limited environmental data and assessment reports can result in a major deficiency for the process of environmental decision making. Academic institutions contributed little to the field. One side of the problem is the very limited funding allocated for research within universities and by KACST. At National level there is no clear plan for establishing basic environmental inventories and conducting research for assessing environmental impact. Such deficiency can be blamed on MEPA, the body responsible for this task, and KACST the advisory and planning body in the field. Very little if any funding is available for academic institutions from governmental bodies such a MEPA, MAW, NCWCD, and MOMRA. Most agencies do not have programmes to support research at local universities to utilise expertise in fields relevant to the environment. (The research centre at KFUPM is the most successful institution involved in environmental research funded by governmental bodies.) The problem is shared by both sides, where governmental agencies lack the vision to plan and establish research programmes with the aid of academic institutions. While on the other, hand academic institutions need to take several steps to promote their abilities and attract research funds. The root of environmental research problems lies in the lack of clear plans and programmes by governmental agencies that have no clear vision of what is needed and to what extent

such research can help in initiating and adopting environmental policies. It is the assumption that research findings have little influence in initiating environmental policies and laws simply because few do exist. However, considering the prevailing administrative culture, if such findings exist, their availability to, or influence on decision makers is questionable.

7.2.2 The Process Predicament

The official path of environmental decision making discussed in chapter five has several deficiencies including the tendency of some agencies to avoid the critical step of PCMCE and MCE. The meeting of the PCMCE and any subcommittees formed is the battle ground between environmental agencies, and in many cases the forum where some policy proposals are delayed for several years. All agencies are required to submit their environmental policy and law proposals to the MCE, this means a critical review by other agencies and feed back of any opposition to the proposal. In the case of MEPA's EIA and NCMP the two vital laws were stopped at this policy making level where committees were formed to resolve the disagreement between opposition agencies and MEPA. Evidently a new mechanism is needed to avoid the deadlock at this stage. This might include the appointment of an independent figure to take decisive decisions if the process reaches a dead end. MEPA also need to be more flexible and realistic in its proposals especially when it comes to the authority of implementation.

In most cases if the proposal manages to pass the MCE it has a good chance of approval by the CM. The other major step is the review by the expert branch and SHC of *Majlis Al-Shura*. In the case of the Expert Branch, more committees might be formed to further review the proposal or to include the view of other agencies. In

the case where the proposal avoids the PCMCE and MCE a more comprehensive review is conducted to make sure that it will face no difficulties in the CM meetings. The Expert Branch has a strong role in preparing the final draft of the policy or law proposal, as its recommendations carry a tangible weight when preparing SGCM memos. When MEPA avoided the PCMCE phase to receive approval for the NCZMP, the CM decided to form a committee including other agencies such as MOMRA and MAW to review the draft, which in reality took the process back to the level of PCMCE. The Social and Health Committee (SHC) of *Majlis Al-Shura* is the committee responsible of reviewing environmental policies and laws. As discussed earlier it is not clear to what extent the committee and the *Majlis* members are aware of the environmental conditions and needs, and if independent scientific advice is requested when reviewing such proposals. It seems that the obstacles placed by environmental agencies is the most critical factor in making the process a very difficult path to follow, indeed the lack of co-ordination and the inability of MEPA to play its role as the co-ordinator of environmental activities is the most obvious failure of the process.

7.3 Environmental Institutions

The institutional structure and distribution of authority in the environmental field has played a role in the current environmental problems. The most important factors are scope of work and mandate granted to environmental institutions that have resulted in areas of authority conflict and overlap of activities. Both also hindered the implementation of officially approved policies and laws. The following sections summarise the institutional dilemma in Saudi environmental policies.

7.3.1 Structure and Mandate

The current administrative structure reflects the degree of attention the government has given to the environmental issue. This was represented by forming the Ministerial Committee on the Environment (MCE) in 1990 to oversee national environmental policies and activities. However, the national structure of environmental institutions has some serious deficiencies. The first step taken to co-ordinate environmental activities by establishing the EPCC in 1981 was a sign of the ever increasing conflict in the environmental arena. Although both the EPCC and later the PCMCE-MCE managed to bring all involved parties to one table, little was achieved in reducing overlap of authority and conflict. PCMCE and its committees became the main obstacle stopping environmental policy proposals. In addition to the lack of any obvious decisive authority, distribution of authority between agencies is the main reason behind this dilemma. The best example is the proposed NCZMP where the area of coastal area management and marine conservation is mandated to several agencies each with a different scope of work and attitude to the issue. On the other hand, nature conservation is shared between MAW, NCWCD, and MEPA, in addition to some involvement from MOMRA. Monitoring environmental conditions in urban and rural areas is shared by MEPA and MOMRA, however, MOMRA is not contributing to this field while MEPA achieved very little in the area of pollution control and management. All governmental bodies have contributed to the ongoing dilemma in the environmental decision making, in addition to their internal problems. MEPA, for example, have several serious problems including the lack of power and resources to co-ordinate environmental activities and monitor the implementation of environmental standards.

Each of the agencies discussed in chapter five and six have their own structural and administrative problems in addition to the common lack of resources and qualified staff. The categories of environmental institutions discussed in chapter five classified all involved agencies into four categories based on their authority, mandate, ranking, and membership in MCE and PCMCE. Independent bodies outside the general national structure i.e. those who are not part of the described decision making process through PCMCE and MCE, proved to be the most successful. This is demonstrated by the successes of Saudi Aramco and RCJY in adopting and implementing environmental policies and standards, though more scrutiny is needed of the activities of Aramco.

Although MAW was the most successful body to pass environmental legislation, it failed in many areas well within its mandate including national parks, nature conservation, and marine environment. All of these areas also cause conflict with other agencies mainly MEPA, NCWCD, and MOMRA. Conflict of interest is obvious in many of MAW's activities. Redistributing authority and scope of work might be the solution for these problems, as such redistribution can reduce conflict of interest and pressure on some agencies, especially MAW.

The internal structure of MEPA, MAW, and MOMRA suffers from some deficiencies which need urgent restructuring. MEPA, as the main environmental agency, is in need of administrative reformation that should bring more flexible administrators capable of playing the role of co-ordinators between environmental agencies. Increasing the Agency's resources and capabilities to conduct environmental research and monitoring is an urgent need. MAW has similar problems, but, if its authority in nature conservation, marine conservation, and

national parks are given to other agencies the work load will be reduced. On the other hand, NCWCD seems to be in good position in terms of its structure and fulfillment of its mandate. MOMRA's role in environmental issues needs a complete review to make it more responsible for urban environmental quality in addition to rural conservation. Its authority to run local municipalities must also include the responsibility to monitor and conserve rural landscape, urban environment, and sensitive habitat within urban boundaries.

Although the general structure of environmental institutions covers most environmental issues and relates to the current political and environmental conditions, several areas are not covered by the current structure or widely distributed between several agencies. Most important is the issue of environmental health. There is no clear authority in this field which has resulted in a gap between policies and regulations. The role of MOH, MEPA, MAW, and MOMRA as the main authorities must be spelled out. Considering that this field is widely distributed between many agencies, forming a specialised body might be a suitable way of co-ordinating such activities.

7.3.2 The Implementation Predicament

For those policies and laws that managed to pass through the decision making process, implementation is the final obstacle. All environmental laws discussed in chapter five faced serious implementation problems including the lack of policing power and/or vague mandate of implementation. However, most laws need the co-operation of several agencies to guarantee full implementation, which does not exist in most cases. Inter authority struggles and overlap of activities play a part in the lack of co-ordination. The important conservation law "Forest and

Rangelands Law M/22" of 1979 suffers from the inability of MAW to provide needed resources for comprehensive implementation. Although MAW claims some success in conserving forest and range lands, the fact is that severe degradation of this natural resource is proof of MAW's failure to implement M/22. MAW lacks the policing power and resources to monitor violation of M/22, further more, implementing this law requires national co-ordination including MOI and MOMRA. However, MAW's problems are more serious than providing the needed resources, as it lacks the qualified staff and vision to plan a clear conservation strategy for this valuable resource.

The National Contingency Plan for Marine Pollution Control "NCPMPC" avoided the problem of resources by distributing the responsibility between several relevant agencies while MEPA maintained the co-ordination responsibility. However, due to the high profile political implication of any oil spill, it is expected that the government will provide immediate funding for any serious incident. (The Gulf war spill is a good example.) On the other hand the Wildlife reserves Law M/12 of 1995 which is sponsored by NCWCD is expected to face little difficulty due to the political power of NCWCD. Nevertheless, authority conflict especially with MAW and to a lesser extent MOMRA, who were not satisfied with the law, might cause some problems mainly on the public land ownership issue. In the long term the public role on such an issue might cause the most serious obstacle to wildlife reserve declaration. Although the law included items guaranteeing the right of the public to express their concern through the local government, it lacks the tools to incorporate a social impact study before approving any reserve. The success of M/12 will depend on the ability of NCWCD to maintain its political support.

As discussed earlier each law has its own problems, however, co-ordinating the implementation is the most common, in addition to lack of policing power and resources. MEPA for example failed to implement its own environmental standards, although the law granted it the power to do so. In this case it is the serious administrative problem and lack of proper long term planning to establish monitoring stations and follow up mechanism. It is noticeable that financial penalties are rarely applied in violation of environmental laws. In any future revision of laws and restructuring of environmental institutions, financial penalties must be part of the implementation power granted to environmental agencies. *Majlis Al-Shura* can play a role in following up the implementation of environmental laws and deliberate on any problems facing implementation.

7.4 Environmental Awareness and The Public Role

The state and activities of environmental awareness discussed in chapter six significantly influences the degree of public participation. The following section summarises both issues.

7.4.1 Environmental Awareness

After seventeen years of mandating MEPA the authority to improve environmental awareness and raise public understanding of environmental issues, the agency has little to be proud of in this field. MEPA has failed to fulfill one of its main duties. On the other hand, the NCWCD has managed to carry out a relatively successful campaign for habitat protection and wildlife conservation awareness. This has left a major sector of environmental issues, especially pollution and development impact on public health uncovered. Independent agencies and

companies such as RCJY and Saudi Aramco have succeeded in adopting and implementing awareness programmes with varied degrees of success.

The SEAP was the first organised effort to educate the public about environmental issues and problems. This project, which was privately funded managed to receive wide media coverage and attracted the attention of the public. The "organising committee" plan managed to introduce the public to a wide range of environmental issues. For many it was the first time they were exposed to such an awareness programme. SEAP was a new phenomenon in the Saudi culture and attracted the attention of a large number of people. However, this was a limited project that lasted only for two months. The dominant message to the public of what is needed from them to maintain a clean environment was not balanced by indicating the government agencies role. Each agency emphasised in its presentation the success they had achieved in conserving the environment and maintaining an hazard free environment.

The Kingdom lacks a clearly structured strategy for environmental awareness. Most successful activities are carried out by independent agencies and companies, while MEPA has no equivalent programmes. SEAP was a good but rather limited effort to improve environmental awareness, it does not represent a long term national strategy. MEPA needs to draw up a National Plan for Environmental Awareness consisting of several programmes each emphasising a specific issue and supported by qualified staff and resources. The sensitivity towards any alarming health hazards and criticism of activities by government bodies can limit the degree of media participation in such a plan.

7.4.2 The Public Role

The role of the public in initiating environmental policies and the degree they can participate in the decision making process is controlled mainly by the prevailing political culture which was discussed earlier in chapters four, six, and seven. However, when considering the state of environmental awareness in the country one cannot expect the public to play a vital role in environmental debate. An ill-informed public cannot participate in policy initiation and public debate. The public reaction in most cases is localised and they are not aware of the complete impact on their health and the environment. It might be argued that such ignorance of environmental awareness is part of the political culture in order to avoid further complications and debate. However, when it comes to serious issues affecting the health of the nation and the next generations, the government must give immediate attention to improving public awareness and including them in the environmental decision making process. This will enrich the process and incorporate local variations and needs into national policies and laws. Although it is not anticipated that the government will allow grassroots environmental societies, it is important for the government to consider some form of environmental societies at various community levels. Such societies can complement governmental activities and help in improving awareness and participate in environmental monitoring. Further more, they can place pressure on the private sector and scrutinize the activities of branches of local government.

7.5 Proposal For Change - Revising The National Framework for Environmental Policies.

The following is a proposal for reforming the national framework for environmental Policies. It consists of suggestions to reform four main areas: Political culture and the public role; Decision Making Process; Environmental Policies and Laws; and Environmental Institutions. This includes a conceptual draft for a new Environmental Policy Act, in addition to a proposal for a new institutional structure.

7.5.1 Political Culture and the Public Role

The discussion in this thesis has demonstrated that despite government attempts to construct a framework for national environmental policies, several restraining factors have obstructed this framework. Most consequential was the prevailing political culture. This fundamental factor can benefit from further reforms, mainly in the degree allowed for public scrutiny of government agencies, activities and programmes. To prepare the ground for successful environmental debate the government needs to encourage public participation in the decision making process and increase freedom of newspapers to assess environmental achievements and express public health conditions and environmental concern. The main ingredient for such public participation is awareness. The government need to draft a National Plan for Environmental Awareness. Such a plan must look at both long and short term goals and be comprehensive enough to cover all environmental sectors, such as environmental health, pollution, waste disposal, and nature conservation, in all sectors and at all levels. The experience of the SEAP can be used as a starting point.

With increasing public awareness, public concern will find its expression within the proposed more flexible civil atmosphere. Consequently, scrutiny of governmental agencies and the private sector will be more constructive. Another important ingredient of increased public participation can be a more active role for the Consultative Council, *Majlis Al-Shura.* The Council must be one of the avenues to channel public concern to the government, and a tool for including the public in the decision making process. A new mechanism is needed to make the members aware of the public needs and concerns. The council might introduce a system of public participation when assessing environmental issues. This could include holding public meetings in different regions and visits to sites suffering from environmental stresses. The Council could also ask academic and independent bodies to conduct studies on environmental conditions and surveys of public concern in relation to environmental issues including air and water qualities, environmental health, and hazards from industrial activities. Such studies can be used in Council deliberation and passed to the involved agencies. The current Social and Health Committee (SHC) have a very wide scope of duties, but forming a specialised committee on environmental issues "Environmental Affairs Committee" will allow the Council to give more attention to such issues. This committee should establish links with the Saudi Environmental Society proposed in this chapter (See section 7.5.3 and the following paragraph), as a means of channeling public concern to the council members.

Grassroots organizations are a new form of public participation and activity needed in the Saudi culture. Although such form of public activism might find it difficult to function within the current political system, the government needs to give it serious consideration as it is of vital importance to improve public awareness and

attract interest in the environmental debate. Grassroots societies can be a beneficial factor in incorporating public concern into the decision making process and placing pressure on both the private and public sectors for an healthier environment. To accommodate such activities within the current political system, it can be argued that such societies can complement government plans and allow the public to participate in following up the implementation of governments policies and programmes. Further more, such societies can be developed under the local governments with an independent executive chair and honorary chairmanship of the local governor. Representatives from governmental bodies can also be part of this activity, in addition to schools and universities. Another form of public societies can function within schools, such as Nature or Environmental Clubs. Some schools do have some limited activities within science clubs. However, a wider well-organised promotion of an Environmental Clubs Programme is needed. MEPA and the Ministry of Education can contribute to funding in addition to donations from the private sector. Allowing such societies to function at school level will significantly improve awareness within the next generation and consequently lead to more constructive participation in environmental debate.

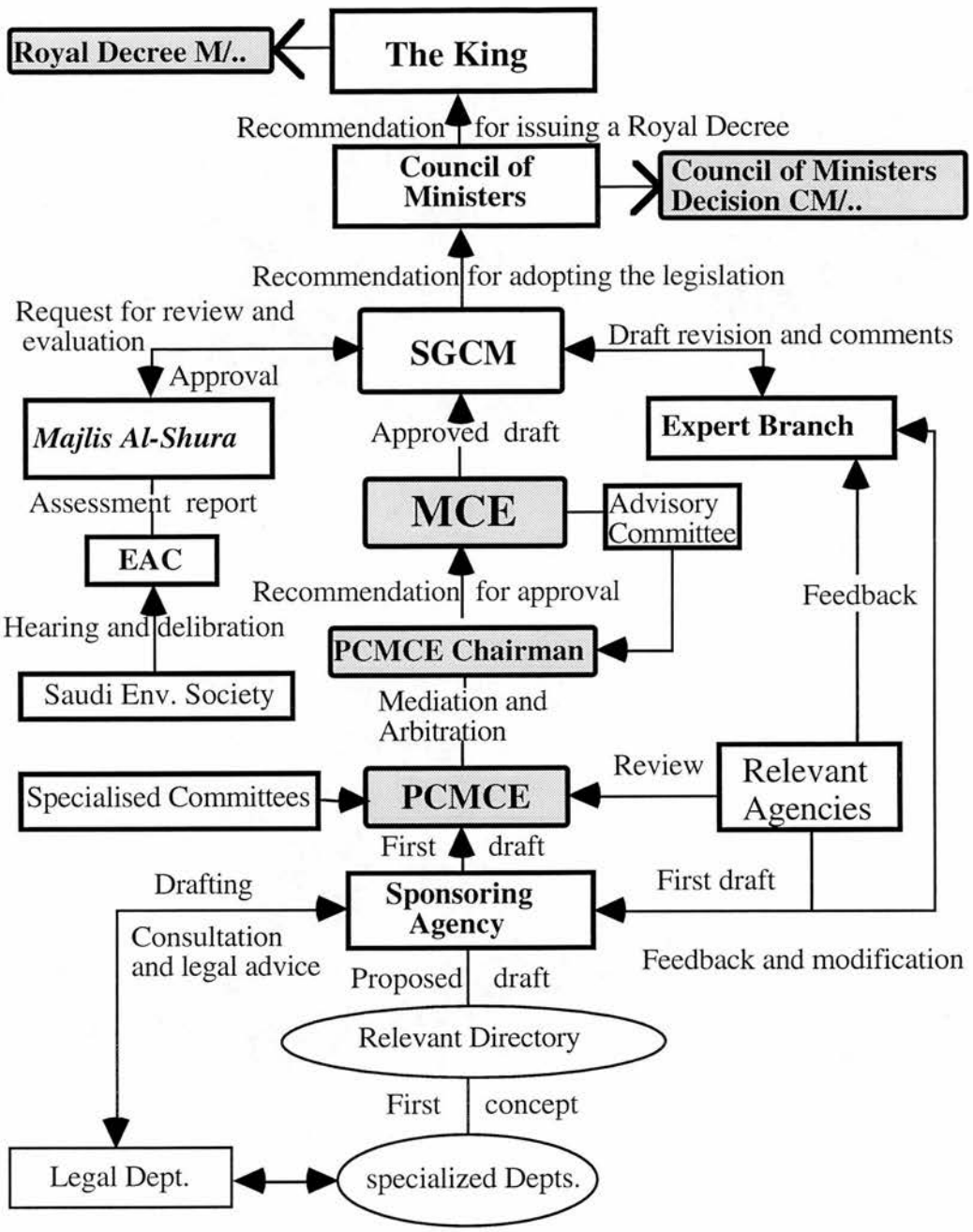
7.5.2 Decision Making Process

The difficulties of the process diagnosed in this thesis are in need of urgent solutions. One element of the solution was prescribed in the further incorporation of public concern and participation. The other element is the availability of basic environmental data and research findings of local environmental conditions and problems. The government needs to establish a National Environmental Inventory consisting of several specialised data bases covering all basic information needed in, assessing local conditions, and the decision making process at policy, plans, and

programmes levels. Existing data bases of the NCWCD, KACST, and universities can be the starting point of this national inventory. Significant change of government attitude towards environmental research is needed. This must include a substantial increase in funds and support for academic institutions. KACST can play a vital role in such an activity, and the Environment Institute plan for future activities can be used as a guide for establishing the national inventory and national research plans. Although the private sector should be encouraged to play their part in funding research activities by adopting regulations for minimum research funds based on the capital invested and annual capital gain, this should not replace or affect government funding especially when considering their dominant role. Establishing new specialised research centres within universities is urgently needed to complement the limited existing activities. e.g., Marine Research Centre can build upon the existence of the Marine Science Faculty at King Abdulaziz University (KAU). It should be emphasised that weak and limited intentions are not enough and substantial resources are needed to structure a reasonable base of scientific data for the benefit and well-being of the next generations.

The most vital obstacle to the decision making process is the lack of decisive authority especially at the PCMCE level where most of the conflict exists. MEPA's participation in the process did not include the co-ordination factor that is part of its mandate. Appointing an independent chairman for PCMCE, from outside the involved agencies could be the vital step in reforming the process. Such an appointment would bring a neutral head with decisive authority in cases reaching dead lock such as in EIA and NCZMP. This appointment should mean relieving MEPA from its role as the secretary general for MCE-PCMCE. The MCE should have its own independent secretarial staff headed by the chairman of the PCMCE

who will also be the Secretary General for the MCE. This will make the MCE an administrative and arbitration body in addition to its role as the body responsible for overseeing all environmental activities. The MCE-PCMCE should function as the last step to resolve any decision making conflicts between environmental agencies. The process will retain the present steps of submitting a policy proposal to the PCMCE and through any designated specialised committees. However, if the involved agencies fail to reach agreement the chairman of PCMCE will have the final decision. To avoid making this one man decision in cases of critical scientific and political issues, an advisory committee will form part of the MCE structure. This will be a neutral committee to advise the chairman of the PCMCE on any dispute between environmental agencies. The chairman will take their advice into consideration when resolving any conflict. If this point of conflict is resolved the process of environmental decision making will be more constructive and the time factor will be substantially reduced. (See figure 7.1 for Reformed Environmental Decision Making Process)



SGCM: Secretary General of the Council of Ministers **MCE:** Ministerial Committee on the Envi.
PCMCE: Preparatory Committee for MCE **EAC**: Environmental Affairs Committee

Figure. 7.1 **Reformed Environmental Decision Making Process**

Source: Compiled by the author.

On the other hand, MEPA's attitude towards distribution of authority, especially at the implementation stage, needs revision. This factor proved to be the most difficult to resolve when discussing policy and law proposals. MEPA need to keep a supervisory and advisory role in implementation rather than being the sole authority. Implementation must be distributed between agencies according to their role and scope of work. e.g. reviewing environmental impact statement for agricultural projects should be part of the licensing procedure checked and approved by MAW. However, MEPA should keep the right to reexamine any statement it considers of high risk. At the same time MAW should apply MEPA's standards and inform them of all proposed projects in addition to seeking advice from MEPA in cases beyond their abilities. This will allow MEPA the role of monitoring and following up implementation rather than being the initiating, monitoring, and implementation authority at the same time. Furthermore, granting MEPA an overruling authority when supervising implementation will guarantee compliance with approved regulations. (See Figure 7.2 for Implementation Process. RCEP is the proposed replacement of MEPA as will be discussed later in this chapter) Such distribution of authority will make use of a wider range of resources. The case of NCPMPC is a good example of such distribution. On the other hand, environmental agencies should be provided with enough resources and policing power to enable them to carry out the implementation activities.

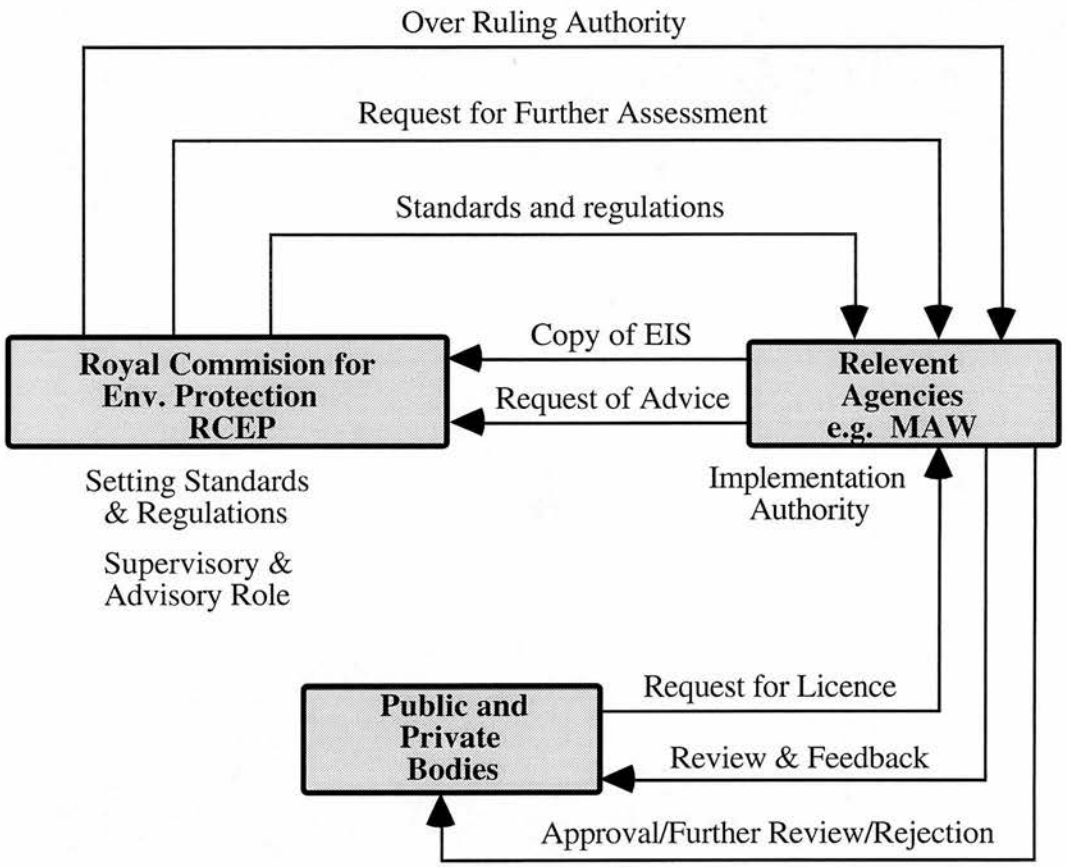


Figure. 7.2 Implementation Process - The Case of EIA

Source: Compiled by the Author

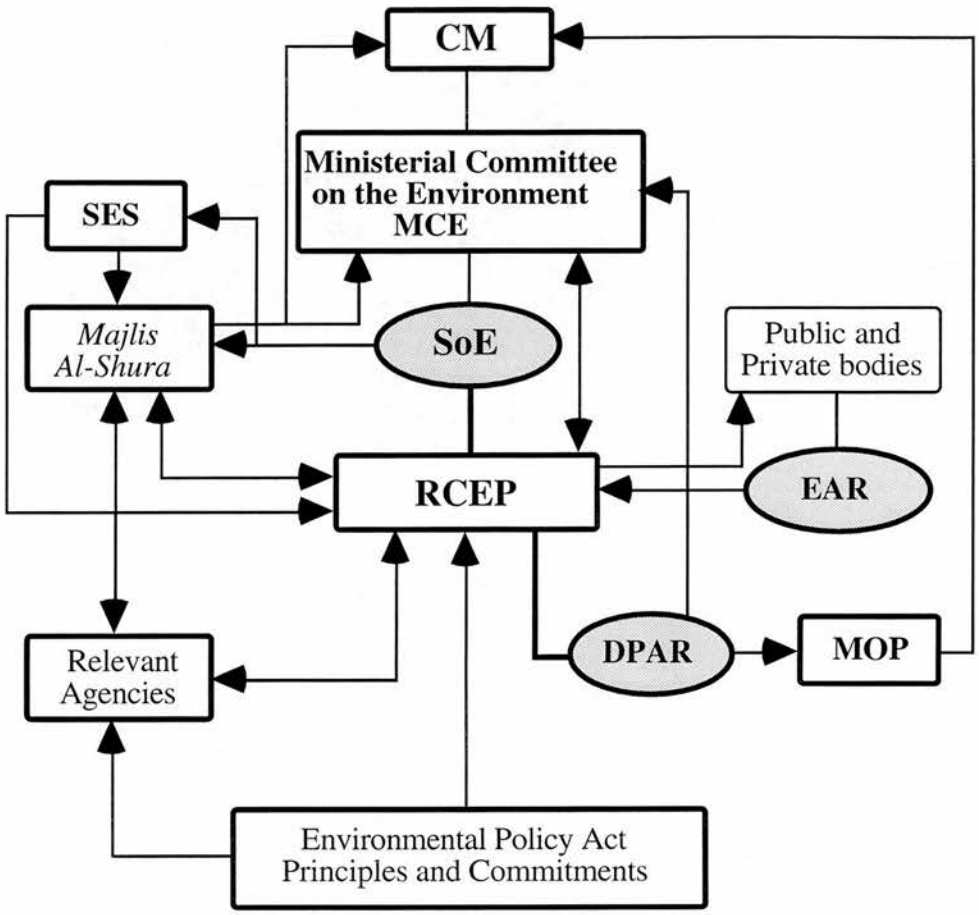
7.5.3 Environmental Policies and Laws

The existing Policy proposals discussed in this thesis can be used as a base for future ones. However, the main dilemma of implementation needs to be resolved to guarantee comprehensive implementation and compliance. Further more, government policies and programmes must contain a time limit to allow the public and the Consultative Council (*Majlis Al-Shura*) to scrutinise and follow the implementation of such policies. The policy proposals dilemma discussed in this thesis is valid for all development plans policy proposals in Saudi Arabia, hence, a national system to follow up implementation of development plans proposals is needed. Such follow up must incorporate the Ministry of Planning (MOP), the body responsible of drafting these plans; the involved agencies; and *Majlis Al-Shura*. The public need to play a part in such activity through grassroots organizations and by expressing their concern to the local media and the Consultative Council members. MOP and MEPA need to publish an assessment report "Development Plans Assessment Report (DPAR)" assessing the achievement of adopted development plans environmental polices and programmes. This report should be published in the last year of each plan separate from and prior to the new plan. The suggestion of a national follow up system will need a discussion of a wider based cultural, political, and administrative reform, which is beyond the scope of this thesis.

State of the Environment reports are one source of information in urgent demand. MEPA must regularly publish an annual SoE report containing comprehensive data and up to date information about the environment and the extent of implementing adopted environmental policies and laws. It is clear that with its status MEPA is not at present capable of such activity, however, with a wider restructuring and improved resources it could be in a position to do so (See sections

7.5.3 & 7.5.4). SoE must be available to the public and decision makers, and also need a follow up from local media and scrutiny from grassroots organizations. (See figure 7.3 for Environmental Policies Follow-up Mechanism, items in the diagram refer also to further proposals in sections 7.5.3 & 7.5.4.)

Many areas are not covered by the current laws, requiring active legislation to fill these gaps especially in environmental health, food safety, and pollution monitoring sectors. Environmental standards need completion, in addition to a periodical revision of old ones based on new scientific findings and local conditions. The government must make a commitment to adopt a comprehensive Environmental Impact Assessment Law within a specific time limit. e.g. within the next year, in addition to a commitment of full implementation within the next two years. The existing draft can be used as a basis for this law, but, Strategic Environmental Assessment must be included as a requirement for all governmental policy proposals. Such impact assessment should cover all development sectors at all levels. Another area in urgent need of legislation is waste disposal. MOMRA and other relevant bodies need to adopt and advocate comprehensive legislation for this sector which lacks any regulation at the moment. This law should provide the tool to monitor and manage waste disposal in urban and rural areas and must also emphasise recycling and minimum health hazards for the public and the next generations. Economic instruments such as monetary penalties can be used in such laws using the internationally acceptable principle "the polluter pays". Incorporating economic instruments including environmental taxes and penalties will improve the ability of environmental bodies to implement and police environmental laws.



CM: Council of Ministers
SES: Saudi Environmental Society
SoE: State of the Environment Report
RCEP: Royal Commision for Environmental Protection
MOP: Ministry of Planning
EAR: Environmental Action Report
DPAR: Development Plans Assessment Report

Figure. 7.3 Environmental Policies Follow-up Mechanism

Source: Compiled by the author

As demonstrated in this thesis environmental policies in Saudi Arabia are fragmented. Hence, there is a need for a general policy act to establish the basic principles and commitments of the government. This act can be used as a foundation for future policies and plans. Such an act for environmental protection can utilise the previously approved polices of development plans and other policy proposals discussed in this thesis such as Conference on Environment and Development-1990 recommendations and Agenda 21-Saudi Arabia. The significance of such a broad act is to declare the government's long term goals and plans as set out in Item 32 of the constitution "General Law of Government", further more it will detail its commitment within a specific time limit. Since the issuing the new constitution in 1992 the government has not followed that commitment with any detailed environmental policy commitment to prepare the ground for further legislation. Considering the fact that the public do not read development plans and are not generally aware of policy proposals, publishing and debating such a policy act in the local media will inform the public of the government's commitment and plans for an healthy and clean environment. Further more, it will set clear principles and commitments to be achieved within a specific time scale. The following is a conceptual draft for an Environmental Policy Act for the Kingdom of Saudi Arabia, prepared by the author, and based on the previous discussion in this thesis.

7.5.3.1 Environmental Policy Act.

The government of Saudi Arabia in recognition of the public concern for environmental conditions, and the need for restoring and maintaining environmental qualities for the well being of its citizens, here by issue this Act to outline their environmental policy and commitments. This Act should function as the reference point for any further environmental policies, legislation, plans, and programmes, and as a legal basis for the government's national environmental policies. This Act establishes several new national environmental bodies and lists the government's

commitments to achieve its stated goals in this Act and previous development plan goals.

Chapter One - Basic principles

The government of the Kingdom of Saudi Arabia is committed to maintain a clean and healthy environment for all humans and non humans living within its internationally recognised boundaries. This commitment which was included in the "Basic Law of Government" Item 32 is based on the Islamic principles of Kelafah. Consequently the government is responsible for maintaining a clean and healthy environment and regulating human activities for the benefit of the present and the next generation. Above all the fulfillment of the divine trusteeship delegated to human kind as expressed in the following Quranic verses

> It is He (Allah) who has made you his vicegerent on earth. Qur-an 6:165
>
> Do not mischief on the Earth after it has been set in order. Qur-an 7:85
>
> It is We Who have Placed you with authority On earth,
> and provided you therein with names For the fulfillment
> of your life: Small are the Thanks that ye give! Qur-an 7:10

Furthermore, the government commitment is part of the recognition of the increased stresses on the environment due to human activities which have resulted in the degradation of environmental qualities and depletion of natural resources. On the basis of these divine teachings and evidence of increased environmental problems, the government is committed to use all available means politically and financially to carry out its trusteeship of this land.

The following outlines the general environmental policy and commitments of the government

General Policies

The government as the responsible body for environmental conditions and qualities will guarantee the rights of the citizens of the Kingdom of Saudi Arabia to an healthy environment by applying the following policy principles:

1- Maintaining a healthy, hazard free living environment for all living creatures. This will include quality of air, water; noise level; healthy food; and an esthetically and culturally pleasant environment.

2- Conserve and manage all kind of natural resources renewable and non renewable, through sound environmental practices including recycling and energy conservation policies.

3- The individual; the private; and public bodies have the right to challenge the decisions of the Royal Commission of Environmental Protection (RCEP) (the main environmental body established by this Act in chapter three) by complaint to the Board of Grievances. Individuals, the public and the private sector have the same right to sue governmental agencies and ministries through the Board of Grievances if they have failed to fulfill their assigned duties outlined in this Act and any other adopted Royal decrees, CM decisions, policies, plans, or programmes. This will include the right to claim compensation.

4- Informing the public of: environmental conditions and provide access to environmental information; the progress of implementing its environmental policies, plans and programmes including this act; and its new commitment through an annual report "State of the Environment Report", that will be available free of charge to the public.

5- Providing basic infrastructure vital for an healthy environment, primarily water and sanitary systems for all the inhabitants of the Kingdom within a specific time limit (See Plans and Programmes Commitments of this Act).

6- Applying sound environmental practices by all governmental agencies; this will include but not be limited to:

a) Applying environmental impact assessment for all its proposed policies, plans, and programmes. All proposals (either at policy, plan, or project level) submitted to the Council of Ministers for official adoption will include a clear assessment of environmental impact on the long and short term, it also will include alternatives to the proposed policies, plans and programmes, and any adverse impact that cannot be avoided by the proposed policy, plan, programme, or project.

b) Implementing a recycling policy for all actions at all levels to minimize waste and save energy.

c) Applying energy conservation practices whenever possible.

d) Submitting an annual report "Environmental Action Report" detailing its environmental measures and achievement, including compliance with officially adopted policies and regulations.

7- Improving environmental awareness and public participation as a key element in the national environmental policy (See Chapter two of this Act).

8- Guarantee the well being of the next generation through long term planning and sustained utilization of natural resources and ecologically sound land use planning.

9- The immediate implementation of Agenda 21- Saudi Arabia which was approved by CM/78 in 3/7/1415 H. Further more, each regional council will produce its own local agenda based on the national one. This should be considered as part of this act, in addition to the fifth and sixth plan environmental policies.

Chapter Two - Legislation, Plans, and Programmes Commitments

The following is a list of the government commitments as a first step of implementing the general policies of this Act. This list will be updated and revised each year and form part of the State of the Environment report published annually by the Royal Commission of Environmental Protection RCEP (established by chapter three of this Act). As the first list of commitments it covers broad issues especially urgently needed legislation, national plans, and programmes. This will establish the ground for more detailed plans and programmes in the future.

1- The government will adopt (within the next year) and fully implement (within the next two years) a comprehensive Environmental Impact Assessment law covering all development aspects including but not limited to agricultural, industrial, urban, mining, petroleum exploration; refining, and processing activities. RCEP will draft the law and establish its standards. It will supervise its implementation by the relevant agencies which will be granted the authority of implementation and licensing procedures. The RCEP will have an overruling power when supervising the implementation.

2- As a basic human and health need the government is committed to provide full coverage of water and sanitary systems for all cities, towns, and villages (municipality A, B and above) within the next five years, and (municipality C, D and all village clusters) within the next seven years.[5]

3- The government will adopt within the next year a National Plan for Environmental Awareness (NPEA) aiming to improve awareness level. The RCEP will be in charge of drafting and implementing this plan is association with the relevant agencies.

4- All individuals and bodies, public and private will be responsible for any environmental impact based on the principle of "the polluter pays." Within the next two years all major industrial bodies, public and private will issue an annual report, "Environmental Action Report", describing compliance with environmental policies, mitigation methods used, and any relevant data of environmental conditions. This will include Saudi Aramco, SABIC and its affiliated companies, all governmental agencies and ministries, and any activity designated by the RCEP.

5- The government will adopt and enforce a comprehensive Waste Disposal regulation within the next year. This will include all kind of waste disposal procedures and establish acceptable standards for such activities. RCEP will draft the regulations in co-ordination with MOMRA and other relevant bodies, which will be in charge of implementing and enforcing the regulation. Economic instruments will form part of the policing tools. RCEP will maintain the supervisory role and overruling power in any implementation dispute.

6- The government will establish a National Network for environmental monitoring covering all major cities (municipalities D, C, B, A and Amanat) and selected rural sites within the next five years. RCEP will be in charge of this network, and will share its data with all relevant agencies and ministries. An annual target should be set for establishing these monitoring stations.

7- The government will update and complete the National Environmental Standards and enforce them within the next year. RCEP will be in charge of setting these standards, and supervising their implementation by the relevant agencies, with the authority to inspect sites, activities, and collect samples within the boundaries of the Kingdom. RCEP will set and enforce monetary penalties as part of the policing measures of these standards. It will also have an overruling power in cases of disputed implementation.

8- The government will adopt and implement a National Plan for Coastal Management within the next two years. The National Commission of Nature Conservation (NCNC) in association with RCEP will draft the plan and supervise its implementation with over ruling powers.

9- The government will reenact the traditional *Hema* system and allow village and tribal communities a leading role in managing this valuable inheritance. The NCNC will draft a law for this purpose, and implement it within the next three years, in addition to a comprehensive survey and management plan.

10- All relevant ministries, agencies, and regional councils will each submit within the next year a progress report detailing the steps taken to achieve and implement their assigned polices and programmes in Agenda 21- Saudi Arabia.

Chapter Three - Institutional structure

As a means of implementing the government environmental policies and commitments the following bodies will be established as part of the environmental institutional structure. Detailed duties and mandate will be issued by further Council of Ministers decisions and/or the higher Committee for Administrative Reformation.

The new national research institutes will be independent scientific research bodies linked to the Council of Ministers.

1) The Royal Commission for Environmental Protection (RCEP)

The Royal Commission for Environmental Protection (RCEP) will be the principal environmental body in the kingdom responsible for protecting and maintaining a clean and healthy environment for its citizens and living creatures. It is authorised to initiate and plan national environmental policies including setting goals and objectives, proposing plans, and programmes. It is the body responsible of setting environmental standards and monitoring environmental conditions. This includes the authority to inspect sites, activities, and collect samples at any time within the official boundaries of the Kingdom of Saudi Arabia. It is the supervisory body for implementing environmental polices, laws, and follow up compliance with national environmental policies and laws. The Commission will issue an annual report describing the Kingdom's environmental conditions and assessing progress in implementing environmental policies (State of the Environment Report).

2) The National Commission for Nature Conservation (NCNC)

This body will build on the existing National Commission for Wildlife Conservation and Development (NCWCD). The Commission in addition to its pervious authority in wildlife conservation and nature reserves will have responsibility in the following fields: National Parks, traditional *Hemas*, Marine environment, forest and range lands, and country side conservation. The commission should establish the needed plans and programmes to conserve the country's natural resources and maintain the biological diversity of its native fauna and flora.

3) The National Institute of Environmental Health (NIEH)

As recognition of the lack of scientific data and specialised monitoring and research bodies for environmental health conditions, the government hereby establish this body as a research centre in the field of environmental health, including food safety, pollution impact, and environmentally related and endemic diseases, to act as a monitory and advisory body to the government and its branches, especially RCEP, MOH, MAW. It will recommend to these bodies the required

standards and measures to maintain a healthy environment. It will also help in establishing the National Environmental Inventory in its specialised fields.

4) The National Institute for Water Resources (NIWR)

As a valuable natural resource the government recognizes the need for a specialised research institute to establish data and information needed in setting national water policies. The institute will conduct research in the field of water conservation and management. It will advise RCEP, MAW and other governmental bodies, and recommend to them any necessary policies and regulation.

5) The Saudi Environmental Society (SES)

The government, in recognition of the importance of including the public in the environmental debate and as a way of improving environmental awareness hereby authorizes the establishment of The Saudi Environmental Society as a non governmental body concerned with environmental awareness and conservation. The Society will consist of regional bodies, each linked to the local governor, who will be the honorary chair. The society will have an open public membership and an elected executive director and representatives from the local governmental bodies.

7.5.4 Environmental Institutions

The following suggestions for redistribution of authorities and restructuring of the main environmental agencies are based on the discussion in this thesis which demonstrated an overlap of authority resulting in authority conflict and delay in the decision making process. This mainly covers MEPA, NCWCD, MAW, and to a lesser extent MOMRA, MOH, MIE, and MPMR. The main theme of this redistribution of authorities and restructuring is based on avoiding overlap of authority and conflict of interest, in addition to grouping related activities under one body. Distributing implementation authority between several agencies rather than concentrating it with one body is another ingredient of this theme. This will enable MEPA-RCEP as the main agency to carry out its duties without the continuous

struggle for power and disputes over authority. Giving each agency its own specialised scope of work and mandating to MEPA-RCEP the overall supervision authority will give these agencies the flexibility to function without the current deadlock caused by MEPA's insistence on combining legislative and implementation authority in many environmental issues.(See Figure 7.3)

The concept of upgrading MEPA administrative rank and giving it more independent status is referred to in several sources such as the proposed General Law of the Environment which referred to the Central Environmental Authority. A MEPA official suggested that this is an option for improving the current administrative rank.[6] Al-Sinani (1996) in a series of articles in local news papers argued for establishing a ministry for the environment. He suggested that such a body should combine all environmental activities including wildlife, forestry, water and sanitary management, to that currently under MEPA. The writer argued that establishing such a ministry will be a historical decision as the first ministry of the environment in the Arab countries.[7] Creating such a wide authority body will repeat the existing dilemma of conflict of interest and will not solve the legislative and implementation dead lock.

Joma (1991) proposed a Ministry for the Environment based on the Islamic ethics governing man-nature relation. This Islamic perspective which he called "Earth as a Mosque" draws from concepts such as vicegerency and *Hisbah* institution.[8] He gave goals and objectives of such an institution and structural organization, further more, he listed expected problems and disadvantages of such a wide body.[9] Another concept for a national body was proposed by Al-Soliman (1993), this proposal is based on the existing Supreme Councils such as the Supreme

Council for Education. Such Councils as Al-Soliman suggested are a small assembly of ministers bringing related ministries and governmental agencies together. The Council has more authority than the individual ministry and reports directly to the Council of Ministers.[10] This proposal aimed to establish a policy setting authority at the national level, however, a similar body already exists (MCE). The proposed body as an assembly will not be able to function as an environmental agency or Ministry capable of following implementation and establishing standards and regulations.

7.5.4.1 MEPA - The Royal Commission for Environmental Protection (RCEP)

As discussed earlier MEPA failed in many of its delegated duties despite the fact that in some cases it had the legal mandate to do so, such as the case of environmental standards. Although MEPA's position as an 'administration' within the Ministry of Defence is considered advantageous due to the strong political position of the ministry, it can be more independent and powerful as an autonomous governmental body. Changing the status of the administration to an independent body linked directly to the King/CM, as is the case of NCWCD and RCJY, will provide the flexibility in planning and management it lacks currently. Furthermore, it will enjoy the right of an independent budget and a higher position in the political structure. This new body will build on the exiting General Directorate of Environmental Protection-MEPA and its departments, consequently maintaining the metrology section as part of MOD. Granting the new body the status of a Royal Commission will grant it direct access to the head of government, the King, and thus the chance of more resources and authority.

Compared with other restructuring alternatives, such as maintaining MEPA as part of the MOD or upgrading it to a full ministry, the independent status as a Royal Commission has more positive elements. Maintaining MEPA within the MOD and increasing its resources will not solve the authority conflict and most importantly its budget allocation will remain part of the MOD budget. This will therefore always be limited in addition to the typical dilemma of financial and administrative bureaucracy existing in all ministries. The option to upgrade it to a full ministry status will increase its administrative and political position, whilst keeping it in a similar rank to other players. Furthermore, its position in the decision making process will be more complicated as a member of the CM and the secretary for PCMCE and MCE at the same time. In general it will not change the current authority conflict, although it can be argued that a full ministry rank might sound more useful from a political propaganda point of view. It is fair to say that as an independent body reporting directly to the King its political position will significantly increase. By avoiding the bureaucracy dilemma, the executive director will enjoy an independent authority and budget. Furthermore, it will give a clear sign of the government effort to place the environmental issue at the top of its political agenda. This will improve the Kingdom's environmental profile and send a message to the public of the higher degree of interest the government is giving to maintain a clean and healthy environment. It also will give an indication of the personal interest the King is giving to the environmental issue.

The following gives a suggestion for the general mandate of RCEP. This is not a detailed scope of work but rather a conceptual outline of the Commission's authority and mandate and should be considered within the context of the proposed review of the national framework of environmental policies discussed in this chapter.

1- General Mandate

The Royal Commission for Environmental Protection (RCEP) is the principal environmental body in the Kingdom responsible for protecting and maintaining a clean and healthy environment for its citizens and living creatures. It is authorised to initiate and plan national environmental policies, including setting goals and objectives, proposing plans, programmes, and drafting the environmental section of the development plans in co-ordination with the MOP. It is the body responsible for setting environmental standards and monitoring environmental conditions. This includes the authority to inspect sites, activities, and collect samples at any time within the official boundaries of the Kingdom of Saudi Arabia. It is the supervisory body for implementing environmental polices, laws, and follow up compliance with national environmental standards. This responsibility is bonded by the authority for implementing environmental laws granted to the relevant agencies and ministries. RCEP have the authority to take the necessary actions including imposing penalties and closing the activity if the relevant agencies have failed to police or implement the law within a specific time limit. The commission will report to the government and the public the state of the environment in an annual report detailing assessment of environmental conditions and implementation progress of adopted policies. It will monitor the impact of development activities on the environment and supervise and participate when needed in the implementation of the EIA law. The Commission will be the body responsible for improving environmental awareness through a National Plan for Environmental Awareness. The Commission is the advisory body for the government and its branches for environmental issues at all levels. The RCEP will have local branches in all thirteen provinces each with the necessary departments and units.

2- General Concept

The new body "The Royal Commission for Environmental Protection" (**RCEP**) will have a similar hierarchical structure to the RCJY and NCWCD's. However, as a Royal Commission the King is the supreme chairman of this body, while a senior member of the royal family interested in environmental issues will act as the Chairman of the Board along with high ranking board members at ministerial level. The board members will be appointed by the King and serve as advisory and monitoring body for the Commission meeting once a year. A qualified Executive Director capable of running this specialised body will be an important member of such a new body. As discussed, one of MEPA's main problems is the lack of an efficient administration capable of planning for long term environmental policies and programmes. This was combined with their insistence on complete authority in the environmental field. Therefore, a more flexible administration is needed to co-ordinate environmental activities and follow up implementation. This requires the first step of delegating implementation power to involved agencies as described in this chapter. (See Fig. 7.2 & Fig. 7.3) Allowing a progressive devolution of authority will improve the Commission's efficiency and capability in policy initiation, monitoring, and supervision of implementation.

The RCEP will need to employ a qualified staff capable of planning for a wide range of environmental plans and programmes that is lacking currently. The independent status will allow the new body to set its own salary scale which has been a problem for all ministries and MEPA for some time. The official salary scale offered in ministries is not attractive for many professionals and whenever they have the chance they move to the private sector or independent government bodies such as Saudi Aramco and the RCJY. Giving the RCEP the authority to set its own

attractive pay scales and ranks will enable it to attract highly qualified staff at national and international level. Most important is the availability of sufficient funds to meet all of its long term plans and programmes.

The government must realise that environmental policies, plans, and programmes need to be based on sufficient data and research findings in addition to continuous monitoring and surveys that all require up to date technology and wide resources. The government must take the first step in restructuring MEPA, while the new administration of RCEP needs to submit a convincing plan for future environmental activities, detailing the required resources and the expected benefits from such expenditure especially for the next generation. The concept of trusteeship and *Kelafah* discussed in the second chapter can be used as the ideological base for proposing RCEP's environmental plans. This will go in harmony with the general theme of the Saudi Constitution "General Law of the Government" discussed in chapter four.

3- Distribution of Authority

As part of the new distribution of authority MEPA will surrender the remaining authority for marine conservation and management to NCNC, including the responsibility of preparing the National Plan for Coastal Management. However, RCEP should maintain the role of advisor and participant in such a plan, in addition to establishing environmental standards and reviewing environmental impact assessment reports when needed. A new scope of work will be included in RCEP's mandate "water management and conservation." This sector is currently within MAW's authority and suffers from a clear conflict of interest with subsidised farming and desalination plant projects. RCEP will be the body responsible for

monitoring and managing water resources in the country, including setting standards, conducting research, and issuing laws to regulate the use of this valuable natural resource in association with the National Institute of Water Resources. Establishing drinking water standards, which are dealt with currently by MEPA, should be expanded to include monitoring and implementation in coordination with MOMRA, MAW, and MOH.

The critical field of marine management and conservation needs a clear distribution of authority. This can be based on the same concept discussed earlier of redistributing the implementation authority. RCEP-NCNC should be in charge of setting the standards and drafting the necessary legislation in co-ordination with the relevant agencies, while implementation is granted to those agencies each within its specialised role. NCNC will keep the overall follow up and compliance supervision. Marine conservation and management will be delegated to NCNC while RCEP will remain in charge of marine pollution including oil spills and coastal monitoring. MOMRA on the other hand will be responsible for managing and monitoring urban coastal areas and any environmental impact resulting from development activities, in addition of implementing EIA law within its boundaries. This distribution reduces authority conflict and the current conflict of interest in the case of MAW. However, such distribution needs to be detailed in a CM decision and in the proposed National Plan for Coastal Management previously known as NCZMP.

4- Administrative Structure

The RCEP administrative hierarchy will be headed by the Chairman of the Board (a senior member of the royal family and member of the CM). The board will consist of the Executive Director at ministerial rank, the ministers of Agriculture,

Health, Municipal Affairs, Interior, Industry and Electricity, Petroleum, in addition to the executive director of NCNC, the chairman of KACST, one members from the private sector, one member from the academic field, and a representative of SES. The executive director will have wide ranging authority to run the commission and plan its policies and programmes. The administrative structure of the Commission will consist of an Administration including all relevant units in addition to the following specialised departments: National Planning, Environmental Standards, Environmental Impact, Human Environment, Water Resources, Pollution Control and Monitoring, Environmental Health, Compliance and Follow-up, and Environmental Awareness. Each of these departments will consist of specialised units with a specific scope of work. The following is a brief description of the general scope of work for these departments.

National Planning Department. This will carry the duty of formalising and drafting national environmental policies and laws in addition to setting long term goals and objectives for the Commission. This will include co-ordinating national policies with the MOP and other environmental agencies. Compiling and issuing the annual state of the environment report is one of this department's duties. It should also include a unit for environmental law to give advice on legal conditions and drafting of legislation. Qualified staff in the related fields such as policy strategist, environmental planners, environmental lawyers, and scientists should be part of this department. The department will also follow up and prepare with the MOP progress reports of development plans, environmental policies, plans, and programmes. The department should be able to provide consultation to other governmental agencies on policy initiation, strategic environmental planning, and strategic environmental assessment.

Environmental Standards Department. The department will be responsible for up dating and completing the current standards in addition to studying and proposing monitoring techniques at local and national levels. Specialised units in the following fields will conduct research and propose standards for local use based on local conditions and risks. These units can include but are not limited to: air quality, water quality, noise, visual quality, municipal waste, hazardous and radio active waste, chemical safety, and standards review. A wide range of scientist will be required to carry out this task. The Commission needs to establish a local expertise in these fields including a programme for scholarships and academic grants for science graduates.

Pollution Control and Monitoring Department. This department will be responsible for planning and running the National Network of Environmental Monitoring, to establish the basic data needed for policy initiation, establishing environmental standards, and decision making processes. It also should prepare long and short term monitoring programmes according to regional and local needs. The department will provide a major part of the data needed to prepare the annual State of the Environment report in addition to more detailed periodical reports for specific cases. The department will be in charge of monitoring industrial and other development activities and their compliance with the national standards. This includes the authority to inspect sites and access to all development activities.

Compliance and Follow up Department. The department will make use of the data provided by the Environmental Standards and Pollution Control and Monitoring departments to check compliance and report this to the relevant agencies for

enforcement. This activity will be co-ordinated with relevant authorities within the range of implementation granted to them. The department is authorised to penalise the responsible agency if it fails to stop the violation. This department will be staffed mainly by administrators, preferably with qualifications and training in environmental law, negotiation, and arbitration.

Human Environment Department. The department is responsible for the well-being of the rural and urban communities. It will conduct research into the socio-economic impact of environmental conditions and its influence on the way of life and distribution of population. The current project of supporting nomadic life should continue with a substantial increase in resources. The department should plan programmes for urban centres emphasising sound environmental planning and ecological design solutions for environmentally sensitive areas. It should co-ordinate with MOMRA and the local government in this field. The department should establish an basic inventory for environmentally sensitive areas within urban areas and advocate ecological management within the business and industrial community.

Environmental Impact Department. This department will be the authority in this field at the national level. It will provide advice and consultation to governmental agencies, in addition to inspecting and assessing EIS when needed. It will need to employ a wide range of specialists and scientists to carry out its duties. The department will follow up and supervise the implementation of the EIA law by the public and private sector, with the authority to request documents and assess mitigation methods when needed. The department should be able to over ride the decision by any governmental agency in this field, in addition to requesting revision of impact statements and mitigation. The department will consist of several units,

each for a specific activity, including marine, industrial, agriculture, and municipal activities. Further units can be added when needed.

Environmental Health Department. The department will act as the connection between the National Institute of Environmental Health and RCEP. The Institute findings and recommendations will be used as the first step to formalise policies and adopt legislation in the field. It will provide advice in the field and recommend to the ES revision of standards and monitoring requirements. The department will co-ordinate its policy recommendations and programmes with the MOH and medical schools. It will administer and propose research funds for local universities.

Environmental Awareness Department. The department will be the responsible body for designing and implementing the National Plan for Environmental Awareness (NPEA). This will include detailed plans and programmes to improve national environmental awareness through setting long and short term goals and objectives. The department is responsible for achieving these goals and conducting research in the field including a periodical assessment of awareness level at regional and national levels. The department will consist of several specialised units including but not limited to: rural community, urban community, schools, industry and business, and assessment and statistics. Periodical assessment reports will contribute to the SoE prepared by the National Planning department.

Water Resources department. The department will be in charge of setting the national policies related to water resources by utilising data and recommendations from the National Institute of Water Resources. This should include assessment of reserves and management of use in addition to regulating water quality in co-

ordination with Environmental Standards department. The department should be able to give recommendations to the MAW and other ministries regarding the wise use of this resource and to assess the impact of intensive farming on the national aquifer reserves.

7.5.4.2 The National Commission for Wildlife Conservation and Development (NCWCD) - The National Commission for Nature Conservation (NCNC).

Out of the three main agencies the NCWCD distinguished itself by a well-organised administrative structure and efficient administration that was reflected in its noticeable success in the field of wildlife conservation. Most vital was the strong political support it enjoyed. This position, which was discussed in chapter five and six can be used as the base for wider activities. In the last few years the commission has increased its authority in several fields including licensing trade in wildlife products and conservation of native vegetation cover, in addition to its main mandate for wildlife conservation and nature reserves. Several areas of work are proposed to be added to the Commission's mandate here, these areas are all related to their current activities and are currently delegated to MAW where limited success has been achieved.

The new assignment will include granting the commission overall authority in all nature conservation maters, most importantly granting it the responsibility of national parks, traditional Hemas, and natural resource management including forest and range lands management. NCWCD proved to be in a better position to administrate these activities, and the strong political position and personal attention given to it by influential members of the royal family will enhance the current deficiencies and lack of resources that have hindered MAW's activities in these

areas. Under this wider mandate the commission title will be changed to reflect such wide duties and authority to be the National Commission for Nature Conservation (NCNC). The board of directors of the NCWCD will be maintained in addition to the hierarchy of decision making, as this will guarantee the political power needed to carry out its new role and authority. The NCNC will require a substantial increase in the current NCWCD resources and budget. The Commission has a good base of qualified staff that need to be considerably widened to accommodate the increased authority.

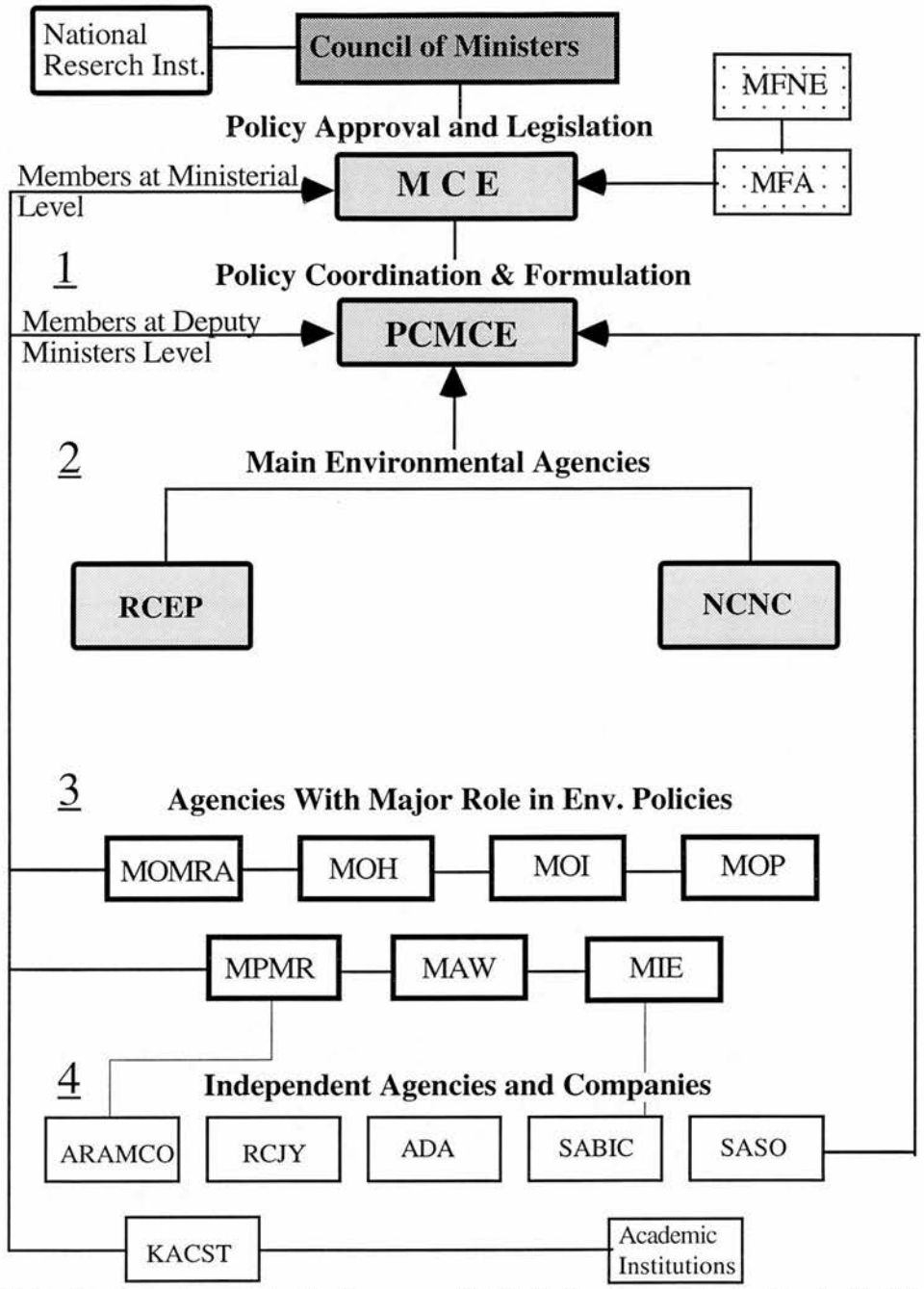
It is assumed that NCNC will be in a better position compared to MAW when implementing current laws and any future policies in the new fields. The Minister of the Interior is a member of the board of directors which will facilitate implementation and reduce any policing conflicts. The NCNC needs to establish a comprehensive plan for scientific research in addition to making substantial contribution to the suggested "National Environmental Inventory". New areas will need special attention especially field research of forest and range lands. The same area needs a comprehensive revision of the current laws and management practices to avoid the current degradation of this valuable natural resource. Establishing a new regulation for managing traditional Hemas should be a priority of the new body's plans. This should include a comprehensive survey and evaluation, in addition to the proposed Hema Law referred to in the National Environmental Policy Act.

Marine environment is another new field to go under the NCNC. It will be the main authority in marine conservation especially marine reserves and monitoring. This position requires good co-ordination between NCNC and other

relevant bodies. The commission should be in a position to give advice to other agencies such as MOMRA, MIE, MPMR, and MAW in this field. MAW will maintain its fishery branch; however, it should be scrutinised by NCNC and RCEP to avoid any conflict of interest. The commission should conduct socio-economic impact studies of its current reserves, and the same should be part of any new reserve proposal. The welfare of the rural and tribal communities should be given more consideration when planning for new reserves. This can include incorporating them into the management system and giving them priority of employment. Furthermore, representatives of the local communities can be included in the management team and invited to planning workshops. (See Fig. 7.4 for New Institutional Categories)

7.5.4.3 Major Players

The proposed restructuring of environmental institutions has reduced MAW's scope of work in many sectors, due to poor results and a clear conflict of interest which existed in MAW's activities as discussed in chapter six. To avoid this serious conflict of interest, marine and water conservation was withdrawn and given to NCNC and RCEP respectively. The other important scopes of work withdrawn are forest and range management, traditional Hemas, and national parks. MAW provided no long term plans to conserve and manage theses resources, in addition to the weak management applied currently. This restructuring will reduce the load on MAW and provides scrutiny of its management of farming and fisheries activities, which until now was not possible due to the combined authority of conservation and development within the same field.



MCE: Ministerial Committee on the Environment. **PCMCE**: Preparatory Committee for MCE. **MAW**: Ministry of Agriculture and Water. **RCEP**: Royal Commission for Environmental Protection **NCNC**: National Commission for Nature Conservation. **MOMRA**: Ministry of Municipal and Rural Affairs. **MOH**: Ministry of Health. **MOI**: Ministry of Interior. **MOP**: Ministry of Planning. **MPMR**: Ministry of Petroleum & Mineral Resources. **MIE**: Ministry of Industry & Electricity. **MFNE**: Ministry of Finance and National Economy. **MFA:** Ministry of Foreign Affairs.

Figure. 7.4 **New Institutional Categories**
Source: Compiled by the author

RCEP should apply more scrutiny and supervision of MAW's activities in the use of chemicals in farming. However, MAW needs to play a more active role in awareness programmes directed towards the farming community explaining the adverse impact of agricultural chemicals. MAW research activities need an substantial increase in funding to cover the wide areas lacking research currently. This will require a comprehensive plan for agricultural research emphasising the local environment and needs. e.g. maintaining local crops and capitalising on the native experience, are some areas in urgent need of research. MAW needs to build stronger ties with local universities and provide funds for research activities. The existing National Centre of Agricultural and Water Research can be used as the first stone in building new and comprehensive research activities.

MOMRA should play a more active role in environmental issues. This can include participation in environmental monitoring especially in urban centres. In this sector it should have its own monitoring stations to complement the National Network. Each municipality will have a specialised department on environmental impact in addition to a department for environmental health and quality responsible for monitoring and implementing the national environmental standards for air, water, noise, and esthetic standards. Furthermore, MOMRA needs to be involved in nature conservation especially in sensitive habitat within its authority limit. Marine environment is another field in need of urgent reform. Municipalities should be responsible for monitoring all coastal activities within their authority limit especially scrutinising licensing for development projects and ensuring strict implementation of EIA law and environmental standards. The over ruling power of RCEP will be the supervisory power which will guarantee MOMRA's compliance with national policies and laws. At national level MOMRA should draft a comprehensive

Environmental Strategy to maintain a clean and healthy environment when approving regional development plans and land use planning schemes. Strategic Environmental Assessment should be a main component of the ministry decision making process and regional development plans. The most urgent piece of legislation MOMRA should embark on is the waste disposal regulation as suggested in the proposed Environmental Policy Act.

Other players such as the Ministry of Industry and Electricity (MIE) should implement its part in the EIA law. Furthermore, they should incorporate SEA in their policy proposals when submitted to the CM. The ministry should give serious attention to industrial planning especially suitability studies and location assessment of any new industrial cities and activities. The Ministry of Petroleum and Minerals should play an active role in supervising Saudi Aramco activities. This might include setting up a special task force with RCEP to supervise and follow up implementing national policies and laws. Mining activities are in urgent need of environmental assessment and evaluation, SEA and EIA should be part of this activity. Monitoring stations should be included in all active mining sites in co-ordination with RCEP. The Ministry of Health needs to give serious attention to environmental health issues. The proposed National Institute for Environmental Health will provide the needed data for future standards and regulation, MOH should utilise such information to legislate for further regulation to maintain a healthy environment.

This chapter synthesised the influencing factors in Saudi environmental policies and proposed a reformed framework for environmental policies. The main components of this framework were based on several proposed reforms to the

existing conditions. These reforms which covered political culture, decision making process, and institutional structure, were included in the conceptual draft of an environmental policy act. Together these reforms represent an attempt to resolve existing problems and construct more comprehensive framework for national environmental policies. The next chapter gives a concluding summary for this thesis and recommendation for future research.

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[1] The King has the power to exempt some ministers from this condition. In the last change to the CM, those occupying major positions such as MOD, MOI, MFA, maintained their position.

[2] The discussion of policy documents is based on the available documents at the time. It is possible that other documents do exist but were not available to the author. For example a classified report prepared by the World Bank dealing with environmental policies and institutions. Child & Granger (1990) listed an unpublished 1985 State of the Environment Report in their bibliography.

[3] It is part of the culture that citizens will direct their complaints to more than one body at the same time.

[4] Interview with **SEAP Official 1.** Riyadh, June 1995.

[5] Eight categories of municipalities exist in the Kingdom. The classification is primarily based on population size. Top of the rank is Amanat which include the capital Riyadh, the two holy cities Makkah and Madenah, in addition to Jeddah and Dammam. There are 7 category A municipalities, 14 category B, 46 category C, 29 category D, and 62 village clusters divided into three categories a, b, and c. These serve small and scattered villages in rural areas.

[6] Interview, **MEPA Official 2.** Jeddah June 1995.

[7] This assumption is not true (See the review of the Sultanate of Oman environmental policies in chapter three). See A. AL-Sinani "A suggestion to establish the first ministry for the environment in the Kingdom of Saudi Arabia" in **Al Riyadh Newspaper** (in Arabic) NO. 10339 Monday 14/10/1996.

[8] As defined in H. Joma, 1991. p. 499. *Hisbah*, is the institution for supervising and safeguarding the fulfillment of right norms of public behavior. It's purpose is to enforce what is right and forbid what is wrong.

[9] H. Joma, 1991. pp. 398-422.

[10] T. Al-Soliman, "Environmental Impacts and The Need for a National Environmental Policy in Saudi Arabia" in **Journal of Architectural and Planning Research.** 10:3 Autumn, 1993. p. 233.

Chapter Eight

Concluding Summary and Recommendation for Future Research

8.1 Concluding Summary

Maintaining a healthy and clean environment is the officially declared aim of most governments. This thesis has attempted to study and assess the Saudi government's efforts in the field of environmental policies. The discussion has demonstrated that with the increased pressure on the environment and the emergence of environmental protection trends in national and international politics, the government has dealt with the issue with varying degrees of success.

The discussion in the first part of the thesis aimed to introduce and review environmental conditions as a background for assessing environmental policies. This review illustrated that environmental conditions continued to deteriorate in several sectors such as marine environment, pollution levels, and forest and rangelands. The public awareness of such conditions is limited. As demonstrated by the review of political system and decision making process, political culture has strongly influenced environmental decision making and policy formulation. One of the main consequences is the lack of public participation and scrutiny of government activities and plans. Reviewing policy documents and laws depicted the current dilemma in Saudi environmental policy. The main obstacles of rivalry and overlap of authority has hindered the process of decision making and stopped vital legislation. The lack of clear distribution of authority and struggles for wider mandates within environmental agencies have left gaps in the legislation efforts.

The delay in adopting the environmental impact assessment law exemplified the case. The success of independent bodies out side the national decision making process make a sharp contrast with the national case.

The other side of the dilemma is the failure to implement adopted policies and laws. This failure can be attributed to the same obstacles that hindered the decision making process such as agency rivalry and authority struggle. However, lack of resources and policing power formed the main obstacle. The discussion of environmental agencies structures and activities demonstrated that most of them lacked qualified staff and resources to carry out the proposed policies. Most critical was their inability to transform these policies into credible plans and programmes.

On the whole the thesis diagnosed several restraining factors that influenced and controlled initiating, formulating, and implementing environmental policies in Saudi Arabia. The main obstacles included: slow and unconstructive environmental decision making process; failure to implement adopted policies and programmes such as the fifth plan proposals; overlap of authority and rivalry between environmental agencies; lack of resources and qualified staff; lack of adequate implementation and policing power; in addition to the limited role for the public in the environmental debate including the absence of credible awareness activities.

Chapter seven attempted to synthesis influencing factors, to propose a revised framework for national environmental policies. Although some of the proposed reforms in the political culture sector might not be favorable within the current political atmosphere, the government should realise that incorporating the public in the decision making process can improve its branches efficiencies and

create satisfaction within the general public. Including the public in policy initiation, and formulation would create a positive political atmosphere. Furthermore, allowing grassroots organisations including the proposed Saudi Environmental Society to play a role in policy initiation and follow up of implementation will improve public awareness and place pressure on the private and public sector to achieve their assigned goals and commitments. This will complement RCEP, NCNC, and MCE roles, and give the public a channel to express their concern. The suggestion to give a more active role to the Consultative Council is another part of reforming the political culture that might be difficult to accommodate in the current system. However, the government can gradually incorporate the concept in future political reforms.

The proposed mechanism for environmental decision making should reduce the current dilemma; however, this will depend on the ability of, and authority given to the proposed position "Chairman of the PCMCE/Secretary General of the MCE". The proposed hierarchy of decision making accommodates relevant agencies fears and complaints regarding authority distribution, though, MEPA-RCEP might consider it a reduction of its over all authority. In reality this authority has never been exercised, claiming it caused severe disruption to the process. RCEP role as the main environmental body was realised in the proposed implementation authority. Granting RCEP an over riding power to oversee and follow up implementation will place pressure on other bodies and guarantee the implementation of environmental policies and compliance with standards and regulations.

The proposed institutional structure grouped related activities under one body and established new fields that were not clearly defined in the current structure. The

proposed RCEP should be able to act as the supervisory body in implementing environmental policies and laws. Furthermore, the Commission should be in a position to initiate national policies based both on its findings and recommendations of the new National Research Institutions. The new structure has withdrawn some of MAW's duties and granted them mainly to NCNC which should function as the main body responsible for preserving and managing the country's natural resources. Grouping related activities such as forest and rangelands, national parks, nature and wildlife reserves, and traditional *Hemas*, aimed to provide a wider platform for natural resource planning and management which was not available in the current structure. Most importantly it reduced conflict of interest that existed in many of MAW's activities. Providing sufficient resources for the new bodies will be vital in their success. The government need to consider the long term gain from environmental protection and its impact on the nation's health and the well-being of the next generation.

The proposed conceptual draft of the Environmental Policy Act attempted to set general principles for the government to act upon when planning its policies and programmes. Granting the public the right to sue the government and violating bodies will place more pressure for compliance with policies and laws. Issuing an annual State of the Environment report will be the base line to evaluate and assess the government's achievements in the environmental field. Setting specific targets with specific time limits will allow the government to follow and assess implementation of its policies and commitments. Furthermore, the Consultative Council and public scrutiny will be more constructive. The proposed Environmental Action Report which should be submitted by public and private bodies will act as a measuring tool for compliance and follow up of

implementing policies and laws. RCEP scrutiny of such reports will provide a reference point for further action and new legislation.

Emerging environmental issues such as increased mining activities and introduction of genetically engineered organisms and products should be considered in each SoE. The need for new legislation should be realised within the context of the speed of introducing such products to the country. The proposed National Institute of Environmental Health should be the monitoring body for such issues. Transportation is another issue in need of an early consideration as it is expected to be a major factor in influencing environmental conditions especially in large urban centres. Both RCEP and the National Institute of Environmental Health should consider this factor in their future assessment process to propose restrictive measures. Extending oil exploration activities to the Red Sea should be controlled with wider involvement from RCEP in assessing S. Aramco's activities. Monitoring such activity from an early stage will help to avoid serious consequences such as those which occurred in the Gulf. Imposing compulsory submission of SEA on Aramco with clear mandate to RCEP to assess such evaluation can be a decisive factor in preventing environmental degradation.

8.2. Suggestions for Further Research

The discussion and assessment in this thesis of environmental policies in Saudi Arabia dealt with the issue from a broad perspective, thus, establishing a much needed primary assessment of the topic. Hence, the thesis should provide a basic platform for future research in related fields. Although most previous academic studies in the field dealt with scientific sectors such as pollution, water resources, and natural resource management, these areas are still in need of further evaluation and research. The area of marine environment lacks basic data related to vital issues such as fisheries stock,

coastal management, marine pollution, and environmental impact of development activities including oil related activities. National parks and traditional *Hemas* need evaluation and extensive surveys. Establishing basic data for the *Hema* system will help to conserve this valuable inheritance. In the agricultural field there are a wide range of areas in need of further studies, especially those related to environmental impact of intensive agriculture and the use of chemicals. A study assessing the possibility of reviving organic farming will help in establishing new direction within the agricultural community.

There is a genuine need to develop assessment tools for use in the decision making process, such tools can include EIA, RA, SEA, and CBA. Future studies can deal with such issues emphasising adapting these tools to the Saudi political culture and decision making process. Incorporating economic instruments in environmental policies and laws is urgently required. Future studies can cover issues like economic and social impact of such instruments and compatibility with national economic and environmental policies.

Urban environmental quality is a potential sector for academic research, including assessing urban growth impact on environmental qualities and implications of land use planning decisions. The role of MOMRA in the environmental field can benefit from further research in areas such as assessing local municipalities roles and waste disposal regulations. A study of rural conservation practices and MOMRA's role in environmental planning and habitat protection can be beneficial for MOMRA's future plans. Incorporating SEA in land use planning and regional planning development plans to reduce long term and cumulative environmental impact is an area of urgent need of study.

Studying the role of local governments in environmental policies and public participation in the environmental debate would provide vital information for the government in reviewing its plans for future environmental policies. A national survey of environmental awareness and public concern is urgently needed. Assessment of awareness programmes is indispensable for government agencies in order to revise and design their awareness plans. Establishing statistical data of environmental awareness will help in policy initiation and evaluation. Translating the approved Agenda 21- Saudi Arabia into action plans and the role of regional councils in adapting regional versions and follow up of implementation is an area in need of study and investigation.

Further assessment of policy initiation and decision making process is needed, such studies can emphasis specific issues such as the public and grassroots organizations roles. The MCE role can benefit from further assessment to suggest future reforms of its authority. The institutional sector will need extensive studies to assess the abilities of each body to carry out their duties; such studies need to evaluate available resources and abilities in order to propose structural reforms and specific need of resources and personnel.

This proposed research, however, is in support of the National Framework of Environmental Policies proposed in this thesis. The key piece of work, therefore is to ensure that this or a similar model, is brought to the attention of key decision makers in the environmental field, for rapid legal drafting, legislation, and implementation. Without such a reformed framework, the present situation will continue, to the detriment of the rich and diverse Saudi environment and the well-being of the next generations.

Appendix A
Interviews Approach

Interviews formed a major source for data used in policy assessment especially when no written documents were available. A major part of the field trip was allocated to arrange for and conduct interviews with officials in environmental agencies and related bodies. The official path of requesting meetings with officials by sending letters from the sponsoring body "King Abdulaziz University" was adopted. However, setting meeting times was mainly the result of personal contact and initiative. In some cases it was not possible to gain access to some officials due to their busy schedule, in others the interview took formal shape and the officials were not willing to provide information more than what is available in documents or official statements. However, several officials were helpful and allowed for lengthy discussions. This was of most significance in constructing the steps of environmental decision making and identify areas of conflict and overlap of authority. Information collected was also valuable in identifying implementation difficulties and constraints.

Interviews were conducted with several agencies, these included: Ministry of Agriculture and Water (MAW), Ministry of Municipal and Rural Affairs (MOMRA), National Commission for Wildlife Conservation and Development (NCWCD), Saudi Environmental Awareness Project (SEAP), all in Riyadh; Meteorology and Environmental Protection Administration (MEPA) in Jeddah; and Saudi Aramco (S.ARAMCO) in Dhahran. The interviewees list included: MAW Official 1, MAW Official 2, MEPA Official 1, MEPA Official 2, MEPA Official 3, MOMRA Official 1, MOMRA Official 2, NCWCD Official 1, S. ARAMCO Official 1, S. ARAMCO Official 2, SEAP Official 1.

In most cases an indirect questioning approach was used. This approach aimed to avoid any reservation which might limit the amount and type of information the official is providing. This meant avoiding asking critical questions regarding the concerned official's agency. Instead more questions were directed to investigate the activities and implementation compliance of other agencies. This helped to find out about areas of conflict and overlap of authority since each agency complained about other bodies interference in their field of work. However, information collected in this way needed further conformation and credibility; this meant cross referencing such information between several interviews to confirm credibility.

In most cases several common questions were asked including: the field of work of the agency, relation to other bodies, difficulties in implementation, availability of resources, and the agency's role in environmental decision making. Questions regarding specific cases were asked and answers were compared with data from other interviews. This helped in constructing difficulties facing implementation and decision making. This also meant that some officials were interviewed twice, which helped in presenting them with other agencies concerns and complaints. Repeating the interview was found to be quite useful to confirm specific areas of conflict and relation between agencies. Interviewing more than one official in the same agency was another useful metheod to find out about coordination within agencies and scope of work and mandate. The response to such questions varied as expected from one official to another, however, the over all data collected were valuable to form a clear picture of the current dilemma in environmental policies and institutions. Most importantly it helped in identifying gaps in legislation, the steps of policy formulation, and difficulties of implementation. All officials interviewed are referred to anonymously according to their affiliation.

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